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JOURNAL
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The Place of Postgraduate Medical Education*

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Postgraduate medical education is inseparably associated with the problems of medical service and medical education. Changes in medical practice, and the medical needs of individuals and the community, on the one hand, and in medical education, on the other, are bound to have significant influences on the character, objectives and methods of postgraduate education. My comments will be directed only toward emphasizing the interdependence of these several fields of activity. The premedical student, the medical student, the intern, the general practitioner, the specialist and the public health administrator must be looked on from an educational point of view only as different phases in the training of personnel to meet the health needs of the country. The educational sequence from premedical education to retirement from practice should be looked on broadly as a single problem, not a succession of isolated and unrelated experiences.

Probably, the most important problem before the medical profession today is that of making the benefits of modern medical knowledge readily available to the entire population. It is generally recognized that our knowledge of the diagnosis, treatment and prevention of disease is far in advance of the application of that knowledge to the needs of individuals or the community. There is a wide gap between what is known and what is applied.

There are several phases of this problem. One is that of securing a clearer recognition of the somewhat different responsibilities of general practitioners, specialists, clinics, public health organizations, industrial and other forms of organized medical practice in relation to the actual needs of individuals and the community. This involves such questions as the faulty distribution of physicians and specialization in excess of the medical needs of the country, which are due in large measure to economic factors, public and professional recognition of proficiency in a single field and to undue emphasis in medical education. Another is

*Delivered before the Faculty Association of the New York Post-Graduate Medical School and Hospital, Jan. 31, 1931.

economic in character, and is concerned with the financial aspects of providing facilities and personnel required for adequate medical care. Yet another is that of familiarizing the public as to what constitutes an adequate medical service in a given community and developing intelligent public opinion and support for such a program.

These several phases are very important, but the most vital single feature is that of keeping physicians in practice abreast of current knowledge and methods of diagnosis, treatment and prevention of disease and the conservation of health. This applies to all practitioners, general and special, in individual and in organized practice, to the end that every physician shall be familiar with the possibilities, value and limitations of methods of diagnosis, treatment and prevention in order to be competent to treat and advise patients intelligently. The social, economic and educational implications of any program designed to infuse the entire profession with new knowledge and to keep its members abreast of current developments in medical science and practice are an outstanding challenge to the medical profession and medical educators.

There is little doubt that the benefits of modern medical services have become known to the public more rapidly than we have been able to provide the trained personnel and necessary facilities. The reason for this is not hard to find because knowledge is not distributable in packages, like commodities, and we cannot deliver medical services except through trained personnel, in whose hands alone is much of this knowledge safe and useful. Many enthusiasts for the organization of medical services fail to appreciate as fully as they should the fact that the successful development of medical services in any community depends in the last analysis upon the training and ability of the medical personnel. It takes time to develop ways and means of insuring that even a large portion of the medical profession can be kept abreast of new knowledge and methods.

This is not the occasion even to attempt a discussion of the problems of postgraduate education but there are several phases of it which need only be mentioned. Specialism is an essential part of modern medical practice, but it is becoming more generally recognized that the medical profession has a responsibility of guaranteeing to the public that those who claim to be specialists are in fact experts in their fields. There is a growing belief that we should create a special identification for those who profess to be specialists, such a recognition to be granted only on evidence of the successful completion of a training which in the opinion of competent medical advice is adequate to prepare the physician for practice in the limited field. This problem has been successfully

dealt with in Denmark and Norway, and legal recognition of specialists exists in the Province of Alberta. Bills for the same purpose have been introduced recently in several of our state legislatures. In Great Britain the higher qualifications of the several Royal Colleges are now required for appointments on the staffs of hospitals in that country. The universities in Great Britain have also set up higher qualifications, such as the degree of Doctor of Medicine, for recognition of special training in addition to the basic requirements for graduation and registration.

In addition to the serious training of specialists, we must recognize the great value of refresher courses of at least two types. The first is for those who are already trained and practicing a specialty for whom short, intensive courses at teaching centers are probably satisfactory. The second is for those in general practice for whom the courses may be short but designed primarily to help the general practitioner to improve his ability in diagnosis and non-specialized treatment.

The continuation education of physicians through various forms of extension education is still another phase of the problem. A variety of methods is being used in the country now to accomplish this purpose. The itinerary courses in North Carolina and Kansas, as examples, are not quite like the university extension courses in Wisconsin and Minnesota. The program in Michigan is developed by congressional districts for convenience of administration. Pennsylvania, Ohio, Missouri, Colorado and other states have programs which vary somewhat in detail. New York has done a great deal in this field, largely through the county medical societies. In addition to these programs, there were forty-four graduate medical schools and institutional courses approved by the American Medical Association in 1929 which provided a wide range of opportunities for postgraduate training.

All of you are familiar with the Fellowship of Medicine and Post-Graduate Medical Association of London which aims to provide postgraduate instruction to qualified physicians in about fifty hospitals in that city. Only recently, the founding of a postgraduate medical school in connection with the Hammersmith Hospital in London was announced as part of a program to develop postgraduate medical training on a comprehensive basis. Time will not permit me to discuss the program of this and other endeavors in Great Britain to carry on the continuation education of practitioners, a field of endeavor in which the Ministry of Health is greatly interested, particularly in relation to various medical aspects of sickness insurance.

An unofficial plan of continuation training was begun in Prussia

in 1901, at which time a central committee for medical postgraduate work was organized for that state. In 1908, a central committee was organized for the entire country, with the local committees made up of representatives of the universities, the hospitals, the medical profession and the social medical societies. It is particularly interesting to know that these committees receive support from the state on the ground that the continued education of practitioners is an essential part of the public health program of the country.

More than eighty teaching centers under the general supervision of this central committee are now in existence. A rather elaborate scheme of extension education is carried to the physicians throughout the country, supplemented by radio talks at regular intervals and a journal devoted exclusively to postgraduate education of general practitioners. In recognition of the importance of coordinating public education in health matters and medical activities, the state-supported Committee for the Hygienic Education of the Public has its headquarters in the Kaiserin Friedrich-Haus in Berlin where the central committee for postgraduate medical education is located.

In the Netherlands, the proposal has been made that every physician be obliged to spend two months in postgraduate education at least once every ten years. Although this proposal has never been enforced, it has stimulated the organization of courses for practitioners throughout the country. At least one state in this country is considering similar legislation. Most of you are familiar with the courses given at Vienna where about 800 American physicians take approximately 3,000 courses each year, mostly in the surgical specialties. The importance of this problem is receiving recognition everywhere in the world, although there is a general opinion that an entirely satisfactory solution has not been found anywhere.

All of these matters have an important bearing on medical practice. The continuation education of physicians is synonymous with good medical practice, and provisions will be made ultimately whereby every physician will be able to continue his education. Indeed, the time may come when every physician may be required in the public interest to take continuation courses to insure that his practice will be kept abreast of current methods of diagnosis, treatment and prevention. Possibly, we shall some day see the medical profession in this country possess a dual objective and organization, one for medical service and a parallel one for postgraduate medical education. Without doubt, the hospitals scattered throughout the country will become important factors of this program and we may look forward expectantly to the time when we shall see

subsidiary medical centers scattered over the length and breadth of our country—the entire network affiliated with university centers from which physicians, technicians, nurses, dentists and other trained personnel will move outward each year in a process of infiltration of the community through these subsidiary centers.

This may sound rather theoretical, but if there is a public, as well as a professional, need for postgraduate and continuation education, some sort of a solution will be found. We need not be interested so much in the speed with which such a program is to be brought about but in the direction in which it should go. In fact, there is already plenty of evidence that some features of such a program are already in existence and functioning satisfactorily.

These various considerations have more important relationships to the basic medical course than most of us appreciate. If we are to devise means of continuing the education of physicians in practice, and to require special training and, possibly, separate licensure for specialists, we must modify, somewhat, our conception of the purposes and methods of the medical course itself. The basic medical course will devote itself in the future even more than it does now to the laying of sound foundations on which later continuation education can be built.

Until recently an effort was made to familiarize the student, as far as time, energy and capacity permitted, with all the facts and methods in every field of medicine. The hope of covering the entire field of medicine satisfactorily in the usual medical course in this country has been abandoned as an unnecessary and futile endeavor because no individual can hope to master all phases of medicine. We have come to a division of labor with consequent need of coordination of individual, specialized fields of activity and responsibility. The basic training endeavors to emphasize the principles of the medical and general sciences which are likely to remain the basis of medical practice, research and teaching in the future.

We are returning to a modified apprenticeship in many medical schools through clinical clerking, small sections, personal contact between instructors and individual students and emphasis upon learning by doing, rather than by passive instruction alone through lectures and demonstrations. We recognize that all true education is self-education and in the more progressive medical schools, serious attention is given to training students in sound methods and habits of study which will give them a permanent intellectual equipment which will prepare them to continue their self-education throughout their professional lives.

The degree to which medicine will occupy its proper place in mod-

ern society depends on professional leadership and the extent to which the rank and file of the profession are able to keep abreast of medical knowledge. We possess the knowledge and personnel to solve a large national problem, and, possessing that knowledge, we are responsible for working out a satisfactory solution. The problem of postgraduate medical education is closely interwoven with the problems of medical practice and education. Proposals for dealing effectively with it promise success only to the extent to which they integrate these several major fields of responsibility. The great need at the moment is to secure joint leadership in a program which will embody the educational ideals and methods of the university and the highest type of medical practice.

Qualification for Specialists

WHEREAS, The advancement of medical science through the results of research and practical experience has stimulated many physicians to confine their professional activities to limited and special fields of medical practice, and

WHEREAS, There has thus been created a class of specialists in medicine; and

WHEREAS, There appears to be a growing tendency on the part of physicians who are not properly qualified to hold themselves out as specialists; therefore be it

Resolved, That the Speaker of the House of Delegates shall appoint, by and with the advice of the President and the Board of Trustees, a Commission on Qualifications for Specialists, composed of nine members; that said commission shall undertake to define the qualifications that should be required of the individual physician who desires to limit his practice to any special field and to be known as a specialist, and that in arriving at such definition the Commission on Qualifications for Specialists should give consideration to questions of education, training and clinical experience; and be it further

Resolved, That this commission shall give consideration to the present status of specialization in medicine, and shall define the various specialties which in the opinion of the commission may be considered as necessary for the best interests of the public and of scientific medicine; and be it further

Resolved, That this commission shall report to the House of Delegates concerning the advisability of the possible enactment of legislation whereby state boards of medical examiners or other bodies charged with the administration of practice acts may be empowered to issue special licenses to physicians who wish to qualify and practice as specialists.

Premedical Education*

WILLIAM D. REID
Boston

The premedical education of our students is a factor in medical education; it is the foundation on which the specialized education in medicine must be built. It receives a varying amount of attention from medical educators. From conversation with representatives of the latter and some familiarity with the literature pertaining to medical education one becomes conscious of a lack of information regarding the aims and methods of nonmedical educators. How can we pass sound judgment on the work of those engaged in premedical education if we are relatively uninformed as to what they are doing? It is the purpose of this article to present selections from the literature on general education in the belief that such a background of knowledge may tend toward more dependable thought regarding the bearing of premedical education on that imparted by the medical school.

Education in General

President Thwing[1] writes that education represents a discipline which humanity needs and does not want. He also states that the individual's capacity and final effectiveness are determined at birth; yet education transmutes possibilities into actualities. Gladstone believed that few people have what is called a turn for anything. The development of our capacities is made out of elements which before their development could hardly be seen.

Elsewhere Thwing[2] writes: "Education causes reasonableness, and complete-mindedness." It should, as Spencer declared, quicken "independent activity" and not give support to submissive receptivity.

"Education means a well-rounded development, a broad vision[3]." President Eliot, a recognized authority on education, interprets all education at every stage of life as including two processes—"the training of powers and the acquisition of knowledge." He characterizes the efficient man as one "who thinks for himself, and is capable of thinking hard and long. This is a process which requires motive and will-power[4]."

*From the Boston University, School of Medicine and Evans Memorial.

1. Thwing, C. F.: Education According to Some Modern Masters, The Platt and Peck Co., New York, 1916, pp. 79, 120, 181.
2. Thwing, C. F.: What Education Has the Most Worth, The Macmillan Co., New York, 1924, p. 180.
3. Halle, R. S.: Which College, The Macmillan Co., New York, 1930, p. 6.
4. Eliot, C. W.: Education for Efficiency, Houghton Mifflin Co., New York, 1909, p. 2, 15.

Cardinal Newman[5] conceives of education as follows: "general culture of mind is the best aid to professional and scientific study, and educated men can do what illiterate men cannot; and the man who has learned to think and to reason and to compare and to discriminate and to analyze, who has refined his taste and formed his judgment, and sharpened his mental vision, will not, indeed, at once be a lawyer, or a pleader, or an orator, or a physician, or a good landlord, or a man of business, or a soldier, or an engineer, or a chemist, or a geologist, or an antiquarian, but he will be placed in that state of intellect in which he can take up any one of the sciences or callings I have referred to, or any other for which he has a taste or special talent, with an ease, a grace, a versatility, and a success, to which another is a stranger. In this sense, then, and as yet I have said but very few words on a large subject, mental culture is emphatically useful."

Professor Whitehead[6] emphasizes wisdom: "you cannot be wise without some basis of knowledge; but you can easily acquire knowledge and remain bare of wisdom."

Matthew Arnold[7] thus characterizes the results of education: "Lucidity of thought, clearness and propriety of language, freedom from prejudice and freedom from stiffness, openness of mind, amiability of manners . . . "

Eliot writes: "Education for efficiency must not be materialistic, prosaic, or utilitarian; it must be idealistic, humane and passionate, or it will not win its goal.[8]" Another remark which rings true is: "A life without a prevailing enthusiasm is sure not to rise to its highest level[8]."

Yet another educator[9] makes an essential of education the acquisition of a mastery of the fundamentals of learning. This includes, above all else, a mastery of communication of thought by spoken and written word, with particular emphasis on obtaining needed information by reading." " . . . Information as such has been overemphasized. It is not the mind that is full of miscellaneous odds and ends that thinks most efficiently. . . . Information is important, but ways to get information are more important."

Zinsser[10] makes an apt statement when he says that true education

5. Footnote 1; p. 236.
6. Whitehead, A. N.: The Aims of Education and Other Essays, The Macmillan Co., New York, 1929, p. 45.
7. Footnote 1, p. 203.
8. Footnote 4, pp. 26, 29, 33 and 54.
9. Smith, E. R.: Education Moves Ahead, The Atlantic Monthly Press, Boston, 1924, p. 4.
10. Zinsser, H.: Problems of the Bacteriologist in His Relations to Medicine and the Public Health, J. Bacteriol., 13:147, March, 1927.

signifies the planting of seed on fertile soil, and not the feeding of the ripened fruit of the past season.

The elements which constitute the cultivated man, are summarized by Eliot as follows:

1. Character is an important element.
2. Ability to express himself by tongue and pen with some accuracy and elegance.
3. Possession of a general knowledge of some things, and a real mastery of some small portion of the human store. His passion for service must fuse with a passion for knowledge.
4. Training in constructive imagination. This is by far the most important part of education.

The correct use of one's native language, and the possession of a historical perspective and a background of historical knowledge are emphasized. This great American educator continues: " . . . the best fruits of real culture are an open mind, broad sympathies, and respect for all the diverse achievements of the human intellect at whatever stage of development they may actually be—the stage of fresh discovery, or bold exploration, or complete conquest."

Whitehead[11] asserts that there is not one course of study which merely gives general culture, and another which gives special knowledge. He is of the opinion that what education has to impart is an intimate sense for the power of ideas, for the beauty of ideas, and for the structure of ideas, together with a particular body of knowledge which has peculiar reference to the life of the being possessing it.

Another quotation from the same author: "the antithesis between a technical and liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical; that is, no education which does not impart both technique and intellectual vision. In simpler language, education should turn out the pupil with something he knows well and something he can do well. This intimate union of practice and theory aids both. The intellect does not work best in a vacuum. The stimulus of creative impulse requires, especially in the case of a child, the quick transition to practice."

Thwing indorses the value of reading. "When culture is defined as the acquainting ourselves 'with the best that has been thought and

11. Footnote 6, pp. 18 and 74.

said in the world,' it becomes plain that it is or should be made a universal possession. For securing it, reading is the most effective method[12]."

In thinking about education one should beware of the tendency for each man to believe that his own kind of education is the best for others.

College Education

Although premedical education is obtained in the lower schools as well as in the colleges, it is generally the latter which have engaged the attention of medical educators. The literature pertaining to colleges and the education that they impart is extensive. Limitations of space permit but a few selections from this literature.

Objectives—"The college should keep alive the spirit of inquiry and not overeducate by methods of passive learning. It is not the amount of knowledge left in the minds of the students, but the state of their interests in things worth being interested in; that is, the effect on their sense of values in life, and their zeal in adjusting themselves to them, that is a real test of a college education[13]."

"The college, like the high school, should be complete in itself, serving one period of life in the best possible way. It should not be a link between the high school and the university or the professional school; it should stand apart, uninfluenced by the demands of later specialized work.[13]"

Hall points out the fact that the human mind displays a readiness to acquire particular phases of mental education at particular age periods. He advocates, therefore, that education be imparted in a method that is in accordance with the particular need of the age period of the pupil. The mental need of the students of the college age period is a broadening out of their knowledge in all directions. Continuing the quotation from President Hall: "The ideal should be decidedly the cultivation of extensive rather than intensive knowledge. The mind must still be stimulated at all points, its ripening delayed always, in order to allow heredity to do all its work, and to round out the individual intellectually and morally to a complete form."

In similar vein Metcalf[14] writes of the work done in a college which functions correctly. He holds that the college should impart

12. Footnote 1, p. 199.
13. Partridge, G. E.: Genetic Philosophy of Education. An Epitome of the Published Educational Writings of President G. Stanley Hall of Clark University, Sturgis and Walton Co., New York, 1912, pp. 326 and 324.
14. Metcalf, M. M.: Research and the American College, Science, 59: 23, Jan. 11, 1924, p. 26.

breadth of knowledge and catholicity of interest which in turn are essential to the soundest and most productive scholarship.

President Lowell[15] sets forth almost the same opinion regarding Harvard College. "The object of the college is not vocational, but cultural; not to train specialists—that comes later—but men whose minds are open to ideas of many kinds; and while to develop power some one subject must be studied thoroughly, it should be done in contact with men having a diversity of interests."

President Wilson[16] wrote: "What we should seek to impart in our colleges . . . is not so much learning as the spirit of learning. It consists in the power to distinguish good reasoning from bad, in the power to digest and interpret evidence, in a habit of catholic observation and a preference for the nonpartisan point of view, in an addiction to clear and logical processes of thought and yet an instinctive desire to interpret rather than to stick to the letter of the reasoning, in a taste for knowledge and a deep respect for the integrity of the human mind."

Matthew Arnold uses these words: "The ideal of a general, liberal training, is to carry to us a knowledge of ourselves and the world.[17]"

Educational Opportunities—Whitehead[18] emphasizes that the educational opportunities of a school are created by its faculty, its environment, its class of students and its endowments. No absolutely rigid curriculum, not modified by its own faculty, should be permissible. These remarks were made in reference to the British schools for boys, but appear to be applicable to the colleges.

Results—It is not easy to evaluate the results of a college education. "College is only an opportunity. One gets out of it, as out of everything else, in exact proportion to what he brings to it.[19] The college does not turn out a finished product, but a product capable of finishing itself.

The dividends from the investment of effort and money put into a college education are sometimes deferred, but they are always cumulative.[20] The effects of a college education are not fully apparent at once but they develop over a considerable period of years. Someone has said that many of the benefits affect the generation engaged in the

15. Lowell, A. L.: President's Report, 1929-1930, Harvard University Press, Cambridge, Mass., p. 4.
16. Wilson, Woodrow: The Spirit of Learning, quoted by Lyon, E. P.: Honor Societies, *Science*, 71:1839:328, March 28, 1930.
17. Footnote 1, p. 198.
18. Footnote 6, p. 21.
19. Footnote 3, p. 3.
20. Footnote 9, p. 10.

active business of the world and as such are not readily noted by the college faculty which is busily engaged in the education of a new and younger generation.

University Education

A distinction is often made between the college and the university. The latter may be defined as a school in which are taught all branches of learning, or the four faculties of theology, medicine, law, and the sciences and arts. The purpose of this article may be furthered by including some selections on education pertaining to the university.

John Stuart Mill[21] would have the university independent. He describes the desired aims of the university thus: "To rear up minds with aspirations and faculties above the herd, capable of leading on their countrymen to greater achievements in virtue, intelligence and social well-being—to do this, and likewise to educate the leisure classes of the community generally, that they may participate as far as possible in the qualities of these superior spirits, and be prepared to appreciate them and follow in their steps—these are purposes requiring institutions placed above dependence on the immediate pleasure of that very multitude whom they are designed to elevate."

Newman[22] depicts such education in these words: "One main portion of intellectual education, of the labors of both school and university, is to remove the original dimness of the mind's eye; to strengthen and perfect its vision; to enable it to look out into the world right forward, steadily and truly; to give the mind clearness, accuracy, precision; to enable it to use words aright, to understand what it says, to conceive justly what it thinks about, to abstract, compare, analyze, divide, and reason correctly."

Quoting Mill again: "What the professional men should carry away with them from a university, is not professional knowledge, but that which should direct the use of their professional knowledge, and bright the light of general culture to illuminate the technicalities of a special pursuit. Men may be competent lawyers without general education, but it depends upon general education to make them philosophical lawyers—who demand, and are capable of apprehending principles, instead of merely cramming their memory with details. And so of all other pursuits, mechanical included. Education makes a man a more intelligent shoemaker, if that be his occupation, but not by teach-

21. Footnote 1, pp. 175, 230 and 149.
22. Footnote 1, pp. 175, 230 and 149.

ing him how to make shoes; it does so by teaching him by the mental exercise it gives, and the habits it impresses. . . . A university is not concerned with elementary instruction; the pupil is supposed to have acquired that before coming here."

Whitehead[23] asserts: "What in the way of detail you continually require will stick in your memory as obvious facts, like the sun and moon; what you casually require can be looked up in any work of reference. The function of a university is to enable you to shed details in favor of principles. . . . Nobody goes about with his knowledge clearly and consciously before him. Mental cultivation is nothing else than the satisfactory way in which the mind will function when it is poked up into activity."

Again from the same author: "The justification for a university is that it preserves the connection between knowledge and the zest of life, by uniting the young and the old in the imaginative consideration of learning. The university imparts knowledge but it imparts it imaginatively."

" . . . prolonged routine work dulls the imagination . . . The way in which a university should function in the preparation for an intellectual career, such as modern business or one of the older professions, is by promoting the imaginative consideration of the various general principles underlying that career[24]."

And, "The whole point of a university, on its educational side, is to bring the young under the intellectual influence of a band of imaginative scholars."

The importance of research is stressed by Whitehead. "The universities are schools of education and schools of research." Partridge says[25]: "The function of the university is to keep alive the spirit of research, to infuse this spirit into all other departments of education and of life, and to keep all open to new ideals." And, again, Whitehead: "Education is discipline for the adventure of life; research is intellectual adventure; and the universities should be homes of adventure shared in common by young and old."

Selection of Medical Students

All of the many applicants for admission to medical school are by no means considered suitable. Considerable effort is expended in select-

23. Footnote 6, pp. 42 and 138.
24. Footnote 6, pp. 144, 150, 138 and 146.
25. Footnote 13, p. 332.

ing those considered to be the most promising for the practice of medicine. Nevertheless, about 20 per cent are dropped in the first two years mostly because of poor scholarship. The selection is made on the basis of (1) scholarship, (2) personality and (3) the aptitude test.[26] The latter is a recent method which gives promise of being very helpful.

It becomes evident that what should be desired is a type of mind, rather than the possession of a body of facts. The latter, unless frequently used, are normally forgotten within a few months. The word "forgotten" should doubtless be used with reservations. Regardless of whether the knowledge is "forgotten" or not, its possession at an earlier period can confidently be assumed to facilitate the restudy of the same subject or one that is, so to speak, built on this foundation.

Much attention has been given to the improvement of education. There are those who believe that the details of the curriculum have been overemphasized and that education in America has become excessively standardized so that the students are kept in a sort of lockstep. There is food for thought in the advice that Huxley[27] gave a friend when he told him to see that his boy's schooling should not be allowed to interfere with his education.

Premedical Requirements

The Association of American Medical Colleges has established the requirement that students who desire to enter medical schools must have had as a minimum 60 semester hours of college work. Thirty-four of these hours must be utilized as follows: chemistry, 12; physics, 8; biology, 8, and English composition, 6 hours, respectively. The further details of these premedical requirements may be found in the catalogue of any of the American colleges of medicine; they need not be repeated here.

An analysis was made of the requirements for admission as stated in the catalogues of 65 medical schools of the United States[28]. There are 76 such institutions, but it is believed that a sufficiently large number were studied to give information of value.

It was disclosed that twenty-six medical schools require more than the minimum 60 semester hours; fourteen of these twenty-six require three years of college work and four require a college degree.

Also it was found that many schools require subjects in addition

26. Moss, F. A.: Scholastic Aptitude Test for Medical Student, J. Assoc. Am. Med. Colls., 6:1, Jan., 1931.
27. Footnote 9, p. 70.
28. The remaining 11 catalogues were requested but were not obtained.

to the premedical studies prescribed as a minimum by the Association of American Medical Colleges. These are shown in the accompanying table. It is noted that a modern foreign language is made a premedical requirement by forty-nine schools; additional chemistry comes second with a rating of sixteen; and additional English is a poor third, numerically, being a requirement in only six medical schools.

The list of the subjects (Table 1) advised but not required is of particular interest. It comprises twenty subjects, somewhat less than half of which may be classified as being science rather than the so-called humanities. They are, moreover, mostly subjects which are not taught in a school of medicine.

TABLE 1. ADDITIONAL PREMEDICAL REQUIREMENTS

	Required	Advised	Not mentioned
1. Anatomy	0	11	54
2. Biology*	6	5	54
3. Botany*	0	8	57
4. Chemistry*	16	17	32
5. Drawing	0	10	55
6. Economics	0	14	51
7. English*	6	15	44
8. Fine Arts	0	1	64
9. Greek	0	9	56
10. History	0	16	49
11. Modern foreign language	49	9	7
12. Latin	2	8	55
13. Logic	0	12	53
14. Mathematics	4	17	44
15. Philosophy	0	1	64
16. Physics*	4	4	57
17. Political science	0	12	53
18. Psychology	2	25	38
19. Social science and sociology	0	23	42
20. Zoology*	0	11	54

*In addition to the Assn. Am. Med. Colls. requirement.

Comment

The taking of an excess of the premedical subjects prescribed by the Association of American Medical Colleges is of doubtful value. Thorpe[29] compared the scholastic grades in the preclinical and in the

29. Thorpe, E. S.: Relative Value of Cultural Courses in Premedical Training, J. Assn. Am. Med. Colls., 6:79, March, 1931.

clinical years of a considerable group of students in the University of Pennsylvania School of Medicine with the amount of A.A.M.C. premedical studies they had taken while in college. The group was divided into three sections: (1) in which the minimum amount was taken; (2) in which twice the amount was taken, and (3) in which approximately three times the amount of these specified subjects were taken. The results did not favor the group of students who took more of the premedical subjects before entering medical school; in fact, those who took merely the prescribed minimal amount averaged better marks for scholarship throughout their medical school course.

This finding is distinctly confirmatory of the dictum of President Hall[30], to the effect that at the time the average student is in college the mind must be stimulated at all points,—the education should be extensive rather than intensive. If the student concentrates on a group of subjects, such as those comprised by the premedical requirement, he may incur the danger of ripening too soon and at least loses the broad mental cultivation pertaining to the study of a wide group of subjects. If there is value in having the prospective medical student remain in college for three or four years, instead of the minimal two years, this value may come, perhaps, from the delay in mental maturity and the study of a greater variety of subjects, which are the natural result of the additional period of time.

Education is something more than the acquisition of a body of facts; it should imply, primarily, the development of a type of mind. The educated man is characterized by an ability to reason and to think logically. His mental powers have been cultivated; he has some knowledge, and, better than that, he knows how to acquire more information, in case of need. He has an appreciation of the relation of his own knowledge to the sum total of the world's knowledge.

It is possible that medical educators pay too much attention to the subjects which they would have studied before the admission of students to medical school, and too little to the state of mental cultivation to which these students have developed. Much of the knowledge is quickly forgotten, but the mental habits and developments that have been acquired have a more permanent effect. It is not so much what they have studied but how they have done it that determines the success of these young people in their subsequent education in medicine.

In my opinion, we should not seek to increase the number or content of the required premedical subjects; the college should be given freedom

30. Footnote 13, p. 324.

to fulfill its purpose. The student will specialize soon enough; he does this when he studies medicine. The value of the study of a broad list of subjects in college seems so obvious that I would have every medical school, as a few already do, add to its statement regarding requirements for admission some advice against the taking of an excess of the prescribed premedical subjects and in favor of the pursuit of a broad group of subjects. By all means, the prospective student should be encouraged to select those subjects which he cannot obtain in medical school and to study which he may never have so good an opportunity as when in college. If he does this, he may open up his mind in ways that may be of value throughout his life as a physician.

It may appear to be desirable, if it be better that the prospective medical student study a wide range of subjects, that these be selected by the Association of American Medical Colleges and added to the list of the premedical requirements. A cogent objection to this is that the interest of the individual in a particular subject is a large factor in the benefit he obtains from its study. The student should be permitted freedom to select those studies in which he is interested.

It would probably be difficult to obtain general agreement as to what subjects are desirable in addition to those in the prescribed minimum requirement. The content of this supposititious list would doubtless require change at frequent intervals. Some enthusiast would constantly be striving for the addition of some subject which in his opinion is important. If carried to its logical extreme, the entire premedical course would become prescribed. It is fallacious to assume that if each student took the same list of subjects, that the student body entering medical school would become intellectually homogeneous; and if such homogeneity were possible, would it be desirable? Then why bother with the matter? It seems to be sufficient if those schools which desire it state in their catalogue the additional subjects they deem valuable, but not compulsory, for admission to their school.

Summary

Selections are given from the literature pertaining to education in general, in the colleges, and in the universities.

An analysis is presented of the requirements for admission to medical schools. Particular attention is given to the subjects required as additional to those prescribed as a minimum by the Association of American Medical Colleges.

Conclusion

Medical educators should become cognizant of the aims and methods of those engaged in premedical education.

Education is something more than the acquisition of a body of facts; it implies, rather, the development of a type of mind.

An increase in the number or content of the required premedical subjects is of doubtful value.

It is desirable that each medical school add to its statement regarding requirements for admission advice in favor of the pursuit of a wide group of subjects rather than of a greater amount of those listed in the minimum requirements laid down by the Association of American Medical Colleges.

Research

Research laboratories dedicated to carrying on fundamental research of high order gloriously serve the advancement of mankind through their investigations and discoveries. When so directed that the atmosphere of independent achievement is allowed to spread into the haunts of upperclass students, as well as to graduate students and teaching staff, they culturally make large contributions to educational results, and, thus, their value to civilization is multiplied.—*Science,* Aug. 21, 1931.

A Report of Data Pertinent to the Problem of Selection of Medical Students

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Medical schools of both the United States and Canada are struggling with the problem of accepting not more than two-thirds, and for some schools not more than one-third or less, of the applicants of any one year. Administrators are universally asking "How shall we choose?"

Dr. F. A. Moss[1], of George Washington University, has recently informed us of what he finds to be the most efficient method of selection from the point of view of academic success in the first two years of medical school—the use of both the Scholastic Aptitude Test score and the average of premedical grades. Dr. E. A. Bott[2], of the University of Toronto, warns against the use of early medical grades as a criterion of academic success in medical school, since he finds that these do not correlate highly with later years of medical study. He assumes the final medical year's work to be the most important indication of a student's academic success, and he also seems to imply that the final year has greatest prognostic value for professional success. On the other hand, Dr. L. B. Wilson[3], of the Mayo Foundation, has found indications that successful clinical work after medical school depends to a greater degree on high quality of teaching and student achievement in preclinical subjects (the first two years of medical work) than on theoretical or short time practical clinical work in medical school. Therefore, we may presume that he would recommend a device which predicts quality of preclinical work successfully as valuable for predicting success in the field.

From statements[4] made by Dr. W. C. Rappleye, of the Commission on Medical Education, we would conclude that grades in medical school are decidedly limited as a predictive measure of success in medical practice. He reports a study made of 1,600 physicians rated by fellow physicians practicing in the same locality as rendering high quality of medical service. Investigation of the medical school record for those of this group for whom records were complete revealed that they fell

1. Moss, F. A.: Scholastic Aptitude Tests for Medical Students, J. Assoc. Am. Med. Colls., March, 1930, pp. 90-101.
2. Bott, E. A.: Predictive Values of College Marks in Medical Subjects, J. Ed. Res., Oct., 1925, pp. 214-227.
3. Wilson, L. B.: Impressiveness in Medical Teaching, J. Assoc. Am. Med. Colls., April, 1929, pp. 146-158.
4. Rappleye, W. C.: Discussion at the Annual Association Meeting, J. Assoc. Am. Med. Colls., July, 1929, p. 203.

about equally in the upper, middle and lower thirds of their respective classes.

All administrators, including those who are making special studies of predictive measures for medical school grades, would agree that the aim in selection is to choose those who would make high types of physicians.

However, we have not yet adequate data which show what the relation of various personality factors and scholastic and test achievement is to success in the field. Hence, while we are collecting such data, we must get acquainted with the present situation in respect to the number and nature of applicants to our medical schools. We must further be aware of the number and the relative nature of the group of accepted applicants.

In 1927, Dr. Hugh Cabot, then Dean of the Medical School of the University of Michigan, appreciated the present need and asked Dr. C. S. Yoakum, vice-president of the University and Director of the Office of Educational Investigations, to assist in the solution of the problem of selection. Dr. Yoakum responded with a program consisting of two parts: first, the compilation of data concerning applicants to the University of Michigan Medical School for the years 1920 to 1927 inclusive, and a survey of the effectiveness of the graduate in practice; second, an investigation of the efficacy of tests for the prediction of quality of work done in medical school and quality of work done in professional practice. The latter phase has resulted in the construction of a Vocabulary Test as a supplement to premedical grades in predicting medical school grades; and a Reading Test in scientific material to test ability to see relationships and draw inferences (reasoning) as a prediction of acuity in medical practice.

The study of graduates has not been begun. The first phase of the program, a study of the applicants to the Medical School of the University of Michigan, forms the content of a 140 page report. Applicants have been studied in respect to residence, nationality, sex, age, number of colleges attended, location of college attended (Michigan or non-Michigan), classification of college attended, number of hours of premedical work, quality of premedical work (science, nonscience, and total), degree received, and the relation of each of these factors to grades in medical school.

Since the complete report could not be published in the JOURNAL, the section chosen for printing is that concerning the predictive value of the various factors studied. Total four years medical grades have been computed for the classes entering in 1920, 1921, 1922 and 1923;

first year lecture grades, for the seven entering classes of 1920 to 1927 inclusive.

I did not participate in the collection of the data herein presented. Full credit for the large task of organizing and directing that work belongs to Dr. C. S. Yoakum. My work began with the interpretation of data already collected and the preparation of the manuscript.

RESIDENCE. By residence, Michigan students (694 cases) rank the same as all non-Michigan students (527 cases)—2.30 for each for first year lecture grades.[5] Students from New York state (43 cases) rank higher than those from Pennsylvania (35 cases) and New Jersey (10 cases)—2.31, 2.19, and 2.03, respectively, for total four years grades. Those from Indiana (32 cases) average above those from Ohio (78 cases) and Illinois (18 cases)—2.42, 2.28, and 2.22, respectively, for total four years medical grades. The group from Ohio-Indiana-Illinois (194 cases) average as high as those from Michigan (694 cases) —2.30 each for first year medical grades.

NATIONALITY. By nationality, as determined by recent racial origin and not by citizenship, the "Americans" (484 cases) and the Jews (110 cases) rank conspicuously higher in total four years medical work, than any other groups. The "Americans" average above the Jews—2.32 compared with 2.26. The Polish-Slav, the Italian-French-Spanish-Belgian, and the Negro groups (33 cases in all) have a markedly low average, 1.93.

SEX. By sex, for total four years medical grades, the women (57 cases) rank about the same as the men (645 cases) averaging 2.27 and 2.30, respectively.

AGE. By age, the optimum group is that of an entering age between 19 and 20 years (63 cases out of a total of 707 cases). On a basis of first year lecture grades, they average 2.42 as compared to the total group average of 2.30. On a basis of total four years medical grades, they average 2.55; the total group averages 2.30. The coefficient of correlation on both of these bases is negative and very small, averaging 0.0925. Although the value is small, the consistency of relationship for four classes for total four years medical work (723 cases) and for seven classes for first year lectures (more than 1000 cases) makes it significant. If the ages 19 to 21 be thrown together, the resulting group of 318 cases averages the highest on four years grades. Ages 25 and 26 are next highest.

INSTITUTION ATTENDED. By institution attended—by first college,

5. Grade averages are computed by assigning the following values to the letters given: A=4; B=3; C=2; D=1; E=0. These values are weighted by the number of hours for the respective courses.

the entrants from the University of Michigan (292 cases) and from other Michigan colleges (160 cases) average higher in total four years medical grades, 2.33 and 2.32, respectively, than those from other colleges (250 cases), 2.25.

By institution attended—by second college, the highest total four years medical grades are obtained by entrants from the University of Michigan (143 cases), 2.30, and from other Michigan colleges (30 cases), 2.31. Other colleges (39 cases) average 2.12.

Classification of College Attended. By classification of first college attended, entrants from Junior Colleges (98 cases), from colleges ranked first, on a "first to fourth" rating[6], (344 cases), and from colleges ranked second class (45 cases), all average about the same in total four years medical grades, 2.35, 2.35, and 2.36, respectively. Those from colleges rated fourth (77 cases) average as high, 2.30, as the total group of 702 students.

By classification of second institution attended, entrants from Junior Colleges (18 cases) and from colleges rated first, (161 cases), carry the highest average of total four years medical grades—2.39 and 2.34 respectively. Those from colleges rated second class average only 2.20 (10 cases).

Hours of Premedical Work. By number of hours of premedical work, the groups with mean grades above the average are: those with graduate credit (13 cases) and those with from 91-105 hours (83 cases) —with average grades of 2.40 for both; those with a Master's degree (only 4 cases) with an average of 2.38; those with a Bachelor's degree (149 cases) with an average of 2.31.

These data might give an impression of a positive and fairly high correlation with grades. That is not the case, however. For first year lecture grades, for seven classes with an average enrollment of 167 students each, the correlation fluctuates around zero and is not consistently either positive or negative. However, it is true that those students with a degree on a combined curriculum (109 cases) and those with a straight Bachelor's degree (118 cases) have a mean average for total four years medical grades above that for the non-degree group (250 cases). The averages are 2.59, 2.53, and 2.48, respectively. Those with 106 or more hours but without a degree (22 cases) are low in mean scholastic standing, 1.99. Those with a combined B. S. degree (78 cases) average as high in total four years medical grades, 2.56, as those with a combined B. A. degree (50 cases), 2.56.

Premedical Grades. By premedical grades, a fair prediction of

6. A classification used by a prominent midwestern graduate school was available.

quality of work in medical school is obtained. The degree of relationship for different years of medical work and for different kinds of medical courses—lecture, laboratory, clinical, demonstration—varies, however.

Between total premedical grades (all colleges attended) and total four years medical work for four classes (742 cases) there is an average correlation of 0.370. Prediction by grades in first college attended alone is higher than by total premedical grades for all colleges attended —0.405 compared to the 0.370 given above.

Prediction of first year lecture grades is higher than for total four years medical grades—a correlation of 0.45 by total premedical work. Fourth year lectures are related to premedical work by the much smaller coefficient of 0.21 for the average of first and second college, science and non-science (about 460 cases involved).

Laboratory courses can be predicted about as well as total medical work or as third year lectures. Clinical work bears only a small relation to premedical grades—an average coefficient of 0.19 for first and second colleges, science and non-science. To both laboratory and clinical work, premedical science is more closely related than premedical non-science. Premedical science grades also give a somewhat better prediction of first year lectures than premedical non-science (more than one thousand cases).

This investigation made at the University of Michigan is an attempt to contribute to the solution of the present pressing problem of wise selection of entrants to medical school in a situation where applicants are far in excess of facilities for acceptance. We still are without a standardized criterion of success in medical practice. We still know little about the relationship between medical grades and premedical grades, test measures, personality measures, and success after college, respectively. This study will, it is hoped, substantiate and supplement the contributions already made. Certain pertinent factors not previously investigated which are presented above should carry us nearer to that point at which we shall have an understanding of the major active forces and the resultant of their interrelations which constitute a high quality of success in the medical profession.

Manikin Practice in Midwifery Teaching

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Statistical studies continue to show the lamentable fact that the childbed mortality in the United States is greater than in any other civilized country. Who is to blame?

Well meaning sentimentalists take advantage of these reports to urge the passage of paternalistic laws and the prodigal expenditure of public money which fail to reach the root of the evil.

Both these conditions are a reproach to the medical profession and indicate either that the interest in obstetrics is not sustained by the student after graduation or that his collegiate instruction is not sufficiently thorough and comprehensive.

Unless the lectures to undergraduates are illustrated with charts and models, and the practical instruction in pelvimetry and palpation on pregnant women is supplemented by adequate exercises on the manikin the student loses interest and does not visualize the obscure objective which his teacher can indicate only vaguely. To attain the highest success in such work, as Lynch has already stated, requires far more time in the obstetric curriculum than the Association of American Medical Colleges allots. Nevertheless, much can be accomplished by confronting the student with concrete evidences of his shortcomings through a continuous graduated drill on the manikin.

Most men who undertake the practice of medicine find an attraction in the effective solution of complicated physical problems. Nowhere is this result more brilliantly possible than in obstetrics, and particularly in operative cases which demand open mindedness, patient intelligence, high skill and the courage to undertake what the judgment directs.

This judgment can not be developed completely except by long familiarity with the elements of the problem and the instruments available for its solution. Skill in using instruments, manual dexterity in executing mental concepts, can be obtained only by practice and only by assiduous practice can that excellence of judgment be attained, that fine adjustment between the idea and the action which constitutes technique.

Practice on the manikin is the first step toward technical efficiency for the novice, and yet how many of our schools are giving adequate manikin courses? In the announcements of fifty-seven of our best colleges only thirteen devote 10 hours or more to manikin exercises. Among

the other forty-four the subject is not mentioned by thirteen, sixteen use the manikin casually or for purposes of illustration, two give elective courses, while thirteen others devote 10 hours or less to this most important subject.

Is it possible to maintain that such neglect is fair to the student or to his college? The men from these institutions go out into practice with a mere smattering of training in a subject which for most of them will be their principal means of support for several years, and if they cannot do their duties with gratification to themselves and their patrons, both parties will be righteously discontented and may justly find fault with the system responsible for the deficiency.

Who is to blame for these poor results? Is it lack of allotted time or inferior studentship, or is it possible that the teaching staff does not realize the transcendent importance of the manikin technique?

To answer that these students have internships whereby they get this practice is not satisfactory. Every teacher will recall that the obstetric service in the larger and better hospitals is not large enough to give the intern a legitimate experience in the whole series of obstetric maneuvers, some of which may not happen for years even in a specialty institution.

Furthermore, if the senior men will think over the work they will recall very few instances in which the intern was permitted to operate. To see, yes. To operate, no. Why not? Because not having had any manikin practice, the teacher believes, and rightly, that the student does not have a proper conception of the purpose or technique of the operation. He could not be trusted to carry out an intervention for which he would have been fitted by manikin exercises if they had been given. Yet this man is licensed to practice and sent out to conduct midwifery cases without supervision.

How much capacity and how much reliability could the chemist's assistant assume if he never did the experiments himself but merely watched his chief perform them?

On the whole, it is miraculous that with so little experience on the manikin so many men have the courage and resourcefulness to go ahead in obstetrics and ultimately become competent operators. What can be done about it? What is being done to correct the difficulty?

At Northwestern University Medical School the manikin course is regarded as the most important and valuable part of the whole obstetric curriculum.

Throughout the junior year the class is divided into sections of forty or fifty men who take twelve periods, of two hours each, in mani-

kin instruction where the classic operative maneuvers are carefully worked out according to a preconceived plan. The first hour is spent in listening to a lecture given by one of the senior men of the department who gives the indications and conditions for some one operation, describes the various steps in its performance and discusses the difficulties which may arise. Every part of the maneuver is carefully illustrated on the manikin. This lecture is accompanied by a textbook assignment and interrupted by an occasional quiz.

At the conclusion of the hour, the section is again divided into groups of seven or eight students and each group takes its place at the manikin under an experienced demonstrator who makes each student go over the operation which he has just seen the senior man perform. This process is repeated until the work is done satisfactorily. The sections are small because a larger number cannot be drilled thoroughly within the time limit although six manikins are used simultaneously.

In this course the forceps operations are demonstrated in all their variations from low and medium to high application and from simple inefficiency of the powers of labor to the malpositions, like deep transverse arrest, occiput posterior, face and brow positions. The diagnosis of presentation and the position of the fetus are studied as well as the management of breech cases, together with extraction and its complications. Then, versions are taken up. Each student undertakes the various maneuvers and discusses the indications, conditions and difficulties that accompany the performance. The prolapse of extremities and cord with methods of reposition are considered in turn, and the course is finished by demonstrations of the destructive operations. If sufficient cadavers are not available for this purpose, grape fruit is used, and the student becomes as familiar with the craniotomy instruments as he is with the scalpel. These impressions may become dim with age but they are never wholly forgotten.

Throughout the course the measurements of the pelvis and of the intrauterine child are continually brought to the attention of the student, their performance exemplified and their importance emphasized. In this way a fundamental knowledge of the principles and processes of normal and abnormal pregnancy is imparted, together with the mechanism of delivery and the means and methods of aiding the procedure.

Obviously, such a course does not fulfill the ideal requirements entirely. Smaller sections would be desirable with more demonstrators and more manikins and more exhaustive individual instruction, but at all events no student leaves the laboratory without some understanding of the numerous obstetric problems and a comprehension of the work

which is emphasized and reinforced later by his experiences in the outpatient department. The members of the class are also taught to think obstetrically and to have at command abundant resources for the recognition and solution of multiple difficulties.

On the other hand, so long as only 2.3 per cent of our largest medical schools have a clear cut and high professional interest in manikin instruction we must expect to have our opening statement hold true, that the childbed mortality in the United States is greater than in any other civilized country.

Teaching of Physiology

In a report made by a subcommittee of the Committee on Syllabus of Studies of the Association of American Medical Colleges in 1895, Henry P. Bowditch, professor of physiology in Harvard Medical College, said:

"An ideal course of instruction should be arranged so as to bring the instruction in physiology subsequent to that of anatomy. The preparation of a syllabus of lectures in physiology could be entrusted to a committee of the American Physiological Society, and if endorsed by the Society would command the conference of the various medical faculties of the country."

Pioneer Medical Education in Asia

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Chengtu, China

Although so far inland, "West China" is one of the oldest settled parts of the far flung Chinese domain. Marco Polo, traveling to Tibet for the Grand Kahn in the thirteenth century, found the city of Chengtu a great capital with palaces and marble balustraded bridges crossing the surrounding moats, which were part of an amazing irrigation system covering the great plain—the eighth wonder of the ancient world and still in operation today. It was constructed at the beginning of the Christian era, by the engineer-king, Li, and his equally famous son. Their work changed the flood-harassed Chengtu Plain to one of earth's garden spots. Here millions find nourishment in the numerous crops of fruits, grains and vegetables, growing the year round, with never a drought—thanks to their skillful distribution of water from the Ming River as it issues from the mountains of the Border Marshes between China and Tibet.

But there are serpents in this Paradise also—disease, ignorance, opium-addiction, social injustice. Malaria and hookworm have for centuries been reducing the strength of the naturally industrious and clever farmers and artisans; and besides these, there is the whole catalog of human ills, aggravated by a total lack of knowledge of hygiene.

Wars, and centuries-old civil corruption, have combined with those enemies of mankind to reduce cities to great accumulations of poverty and unsanitary living. Property and lands have been in the hands of a small wealthy minority, while the Buddhist monasteries have controlled vast acreages. The revolution led by Sun Yat Sen—American trained as he was—and a graduate, by the way, of the first Mission Hospital Medical School in China—has in twenty years brought forth small visible improvement, altho his life-work resulted, more than any other's, in the amazing spectacle of such a massive population becoming national-minded.

As a result of the widespread turmoil of the last two decades, West China has reverted to its ancient habit of assuming a semi-independent political and geographic status. It is effectively shut off from Central and Eastern China by a great mountain barrier, thru which only the mighty waters of he Yangtze River have carved a passable highway. The projected railway to West China, surveyed first by British, later by American, engineers, suffered a complete breakdown thru revolution

and defalcation, while, in the political field, the World War dealt its worst blow to China by interrupting the progress of Constitutional Reconstruction, and substituting a military system that has in one decade retarded trade, industry and education, almost to their extinction in the interior.

Lack of Public School System

With a population in this West China hinterland almost equal to that of the United States, there is today no public school system worthy of the name, altho there is a nominal acceptance of the program of education laid out by the National Government at Nanking. Local communities have, occasionally, succeeded partly in conducting public schools, and a Provincial University was even inaugurated at the Capital; but these have repeatedly broken down either because of public funds being wasted by the military officials, or because of the poor character and preparation of the young teachers who have tried to supplant the old time literati and their endless task of teaching the old classics. The old scholars had one merit without which the young modern is failing—they taught and largely exemplified the stable character of the Confucian ethical system. "Western Science" has helped put this in the discard; now the Communist would sweep out religion also.

Extreme Need for Medical Practitioners

If 50,000 qualified doctors could be set to work this year in West China alone there would still be but one physician for every 2,000 people. And these doctors would need the assistance of, say, three times as many nurses of all kinds; that is, more than a hundred thousand. In addition, I would suggest, about as many dentists as doctors would be needed in addition. This is the challenge that comes to the church in its effort to salvage sick humanity.

Growth of Mission Education in West China

Six American and British Missions[1] began their work in 1881 or soon thereafter. Cooperation was adopted from the beginning; and it was not long before it became apparent that native leadership in modern life could not be forthcoming without efficient schools; accordingly, the Missions began elementary and secondary schools. Some of these, like the M. E. Boys High School of Chungking, have sent out a host of graduates into business, government, professional teaching, and church positions. Many students have come both from high and low ranks in society. Perhaps, more of the humbler class have made good. This il-

1. These were: The Friends Foreign Mission Association of Great Britain and Ireland; The Church Missionary Society (Anglican); the China Inland Mission; the Canadian Methodist; the American Baptist Foreign Missionary Society; the Methodist Episcopal Board of Foreign Missions (USA).

lustrates Simon Flexner's remark that "in preparatory education, class distinctions work injuries: good material may be lost by exclusion because it comes from 'the wrong people'; or there may be wasted effort spent on stupid and indolent individuals who are allowed to enter because they are from 'the right sort'." Chinese history, in particular, is full of instances where boys from humble country homes have risen to scholastic and official rank. Agriculture was ever held in honor next to learning.

By 1910, it was seen that with many students graduating from secondary schools, there was developing a need for opportunities in higher education; accordingly, in that year, five of the missions agreed to cooperate further in founding a University at the capital city, Chengtu. Land was gradually acquired, and each mission built a "college" where students from its own territory could find residence. The various missions also appointed teachers to serve on a common faculty, which was divided into faculties of arts, of science, of religion, and of education. In 1914, the University Senate, consisting of representatives of the missions and churches, sanctioned the addition of medical and dental faculties.

The Medical School

In spite of the difficulty of obtaining premedical education, the medical faculty soon became the most popular, enrolling about one-third of the student body. This proportion has been maintained until the present time. Only male students were admitted until five years ago, when it was decided that the time was ripe for the admission of young women, a group of whom were then waiting for an opportunity to prepare themselves for teaching, medicine, dentistry, and various forms of religious and social work.

The "Women's College" was opened in 1925 and became an instant success; and its financial support was guaranteed by three American and Canadian women's mission societies. The women students not only began to press the male students hard for scholastic honors, but their presence effected a marked rise in the general tone and "spirit" of the student body.

The University Hospital

Meanwhile, four mission hospitals had been functioning with considerable success within the city. Finally, 1926, thru the United Church of Canada[2], funds were made available for a new medical laboratories building at the University, and a plan for ultimately joining all hospital work in one plant adjacent to the medical school was decided upon.

2. The Women's, the Men's, and the Dental Hospitals were all established by the Canadian Methodist Mission.

As the consummation of this scheme must be some time distant, the old hospitals in the city were united under one management as the "University Hospital," with the medical faculty directly in charge. The separate plants took on strictly specialized work as far as possible: eye, ear, nose and throat at the Methodist Hospital; gynecology, obstetrics and pediatrics at the Hospital for Women and Children; and general surgery and medicine at the General Hospital for Men. The fourth hospital is a dental clinic. These units are furnishing abundant clinical teaching material. A department of pathology serves the whole group. A central outpatient department serves all except the eye, ear, nose and throat hospital which takes care of its own outpatients in those specialties. It is under the direction of Dr. Robt. A. Peterson, who has a nation-wide reputation, and has built up a very active institution.

Rise of Standards in Medical Education

In view of the fact that a new era in Medical Education had been opened in 1906, when the requirement of two collegiate premedical years was introduced, we, in West China, were fortunate in having had broad foundations laid in the provision of science and arts faculties in the Union University. This enabled us at the very beginning to take our place as belonging to the "university type" of medical school, according to Abraham Flexner's classification of medical schools, in his book on "Medical Education." We were fortunate in having able and devoted men from Canada, the U. S. A., and England, who laid such good foundations in the fundamental sciences, that practically from the beginning the school was able to fulfill Class A requirements from the premedical standpoint.

By 1920, fairly well equipped laboratories of biochemistry, physiology and pathology were in operation, and anatomical dissection was assured sufficient cadaver material.

The University as a whole was now the object of the respect in the field of higher education that it deserved as the pioneer institution in this great area; and students who formerly would have thought of foreign or down-river institutions began to apply for entrance and matriculation. Indeed, the achievement of a Union University at one bound in Western China proved to be the needed impetus to further the combination of forces in other parts of the Orient, with the result that several "union" institutions along the eastern coastal regions soon materialized.

Thoughtful and educated Chinese are heartily in sympathy with the work being done by these Mission institutions, and it only remains to be seen whether this favorable popular regard can survive the destructive

aggressiveness of the agents of sovietism who view these successful eleemosynary institutions with jealous ill-will.

Premedical Requirements

Sixty hours of collegiate work in definitely required subjects are taken in the science faculty. These are:

I. General biology. Comparative zoology.

II. Mathematics, to and including trigonometry.

III. Chemistry: General inorganic; organic; quantitative and qualitative analysis and physical.

IV. Physics: General and special, including at least heat, light and electricity.

V. Psychology and logic.

VI. Languages: With high school English as a prerequisite, English is required to the extent of at least reading and "hearing" ability. Scientific English is also required, followed in the medical course proper by courses and assignments in medical literature.

VII. Electives: Ethics; religion; history; Chinese literature.

Medical Course Proper

This is similar to the usual course in western schools. More hours are given in most courses, as classes are small, and more individual attention can be given. After the second year, the students live in a dormitory attached to the General Hospital for Men, in the case of male students; at the Hospital for Women and Children, in the case of women students. Fourth year students act as clinical clerks and candidates for a degree must take an intern service of one year before receiving their diplomas. All remain at the three hospitals in the city of Chengtu and are given a rotating service in the various institutions. Opportunity for postgraduate work is offered to graduates, in eye, ear, nose and throat, laboratory diagnosis and pathology, gynecology and obstetrics, cystoscopy.

In the preclinical years, the students carry out dissection and experimental work in fairly well-equipped laboratories where apparatus is provided for individuals and groups as necessary.

Lectures and conferences are in Chinese, until the last year when English is used as much as possible, in order to accustom the student to discussion as well as reading of medical literature, and to prepare him for further study or service in English-speaking institutions, such as the Peking Union Medical College. Graduates are gradually being sent abroad for postgraduate training and experience.

The Dental School

This was begun as an independent faculty, also in 1914. The predental course and the first two years of dentistry proper, were practically identical with those in the medical course and under the same instructors. Recently the two faculties were amalgamated and the students pursue the same course thru the preclinical years. This has been and still is the only dental school in all Eastern Asia, outside of Japan; and there has been considerable agitation to have it moved to a point nearer the coast in order to serve a wider area. The original faculty consisted of dental surgeons sent out by the Canadian Methodist Mission; they were Drs. A. W. Lindsay and J. E. Thompson of Toronto. They were later reenforced by Dr. Harrison Mullet, of Toronto, and Dr. Morton F. Yates of the American Baptist Mission, who is now teaching in the Harvard School of Dentistry in Boston; still later by Dr. Gordon Agnew of Toronto University. Two graduates, one of whom has had postgraduate work in Canada, are now on the teaching staff.

Future Policy

The aim is to push the staffing of the medical and dental school with nationals as fast as suitable candidates can be found and prepared. Meanwhile, it is hoped to maintain a foreign staff of from twelve to fifteen full-time men and women, for an indefinite period.

Secondly, provision is to be made for admission of twice as many students as heretofore. The number of graduates to date is something over forty; they have in a striking fashion justified the confidence reposed in them, when they were given their diplomas, by their management of hospitals, especially three years ago when foreigners had to leave for a time and placed the responsibility for patients and institutions in the hands of these young men. They faced a serious situation, and in some cases saved their hospitals and mission properties from military occupation and communist attack by virtue of their loyalty and professional ability.

Thirdly, it is necessary to finish the third unit of the Medical Laboratories Building, the first two units of which have already been in commission for two years; and to commence the building of the first unit of the new University Hospital on the ground adjacent to the medical school. This project will require about $300,000, gold, for the completion and equipment of all units.

Lastly, sympathetic cooperation with national aims and programs of education and social reform is an obvious necessity, with the ultimate object of leaving this and all departments of the University in the hands of nationals, as an indigenous institution.

It is considered not to be incompatible with this program, to maintain a consistent background of religious culture and character training. Hitherto, only candidates trained in mission preparatory schools and exhibiting moral stamina as well as intellectual ability have been able to pass entrance tests. Candidates from non-mission schools are not excluded; they have simply not been fitted for entrance. It is hoped that this situation will be remedied; but as yet efficiency in the public educational departments remains to be achieved. This situation well illustrates the truth of Abraham Flexner's remark: "Medical education cannot be described or discussed apart from general education. The maturity, previous training, and intellectual competence of the student body determine in advance the scope, quality, method, aims and outcome of the instruction offered by the Medical Faculty."

"Elementary and secondary education should, of course, be conceived from the standpoint of the pupil as a human being, not (simply) as a future doctor, artist, or engineer."—Ibid.

Medical schools, translations of medical textbooks, creation of a scientific and medical nomenclature, hospitals and dispensaries, nurses training schools, medical associations—these are some of the results of medical missions, which have for a century given the most understandable and best appreciated demonstrations of Christ's purpose in giving a "more abundant life" to the whole world, thru His church.

The Full Time Clinical Teacher

In a talk on Medical Education made by Dr. W. W. Keen at the fourth annual banquet of the Harvard Medical Alumni Association on June 26, 1894, he said that he hoped the time would come when professors should give up their private practice and confine themselves to the school and hospital.

PROGRAM

of the Forty-second Annual Meeting of the

Association of American Medical Colleges

to be held November 30, December 1 and 2, 1931

in New Orleans, Louisiana

Monday, November 30
9:30 A. M.

Health of Medical Students

WILLIAM PEPPER, University of Pennsylvania School of Medicine.

Discussion opened by DR. J. M. H. ROWLAND, University of Maryland School of Medicine.

Tendencies in Medical Practice: Study of Class of 1925.

H. G. WEISKOTTEN, Syracuse University, College of Medicine.

Heredity as a Subject in the Medical Curriculum

E. P. LYON, University of Minnesota Medical School

Rôle of the Medical School in the Development of Character in the Medical Student

PERCY T. MAGAN, College of Medical Evangelists

Relationship Between Medicine and Dentistry

FREDERICK T. VAN BEUREN, JR., Columbia University College of Physicians and Surgeons.

Cooperation Between the College of Medicine of the State University and Other State Departments in Illinois.

D. J. DAVIS, University of Illinois College of Medicine.

Tuesday, December 1
9:30 A. M.

Report of Committee on the Aptitude Test.

F. A. MOSS, Secretary of the Committee.

Premedical Qualifications in Relation to Achievement in Medical College.

W. H. MOURSUND, Baylor University College of Medicine.

Graduate Work in Premedical Sciences.

G. CARL HUBER, University of Michigan Graduate School.

Research in Graduate Medical Schools.
LOUIS B. WILSON, University of Minnesota Graduate School.

Wednesday, December 2
9:30 A. M.

Teaching of Preventive Medicine.
W. S. LEATHERS, Vanderbilt University School of Medicine.

Postgraduate Extramural Teaching in Obstetrics.
J. R. McCORD, Emory University School of Medicine.

Postgraduate Teaching in Obstetrics Through Extramural Courses.
E. D. PLASS, State University of Iowa School of Medicine.

Obstetric Teaching: Résumé of Proceedings of White House Conference.
FRED L. ADAIR, University of Chicago and White House Conference.

Pediatrics: Place in General Health Education Program.
HORTON CASPARIS, Vanderbilt University.

Pediatric Teaching: Résumé of Proceedings of White House Conference.
BORDEN S. VEEDER, Washington University and White House Conference.

4:00 P. M.

The eight-day cruise, offered by the United Fruit Company, touching at Honduras and Havana, Cuba, starts at 4:00 P. M. Reservations must be made at office of the U. F. Co.

JOURNAL
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DR. FRED C. ZAPFFE, Editor, 25 East Washington Street, Chicago

The Annual Meeting

The forty-second annual meeting will be held in New Orleans, Louisiana, on November 30, December 1 and 2 (Monday, Tuesday and Wednesday), 1931.

Any one who is interested in medical education and medical teaching, or in problems contacting with medical education, is cordially invited to come to this meeting and to participate in the discussions.

Manifestly, it is impossible for all the 12,000 teachers in medical schools to attend the meeting in person, nevertheless, it is strongly urged that as many of them as can attend should do so and hear the proceedings at first hand.

The program is published elsewhere in this issue.

One of the special features of the meeting is the postconvention trip offered by the United Fruit Company—a ten day visit to Central America and Cuba, including a special visit to the medical schools of these countries. This is a ten day trip at a really nominal cost, including all service.

The entertainment arranged for by the local committee is full of promise of never-to-be-forgotten memories which will make the visit to New Orleans an especially pleasurable one.

Special railroad rates will be allowed if not less than 150 persons attend the meeting. It will be advisable to ask for the convention certificate when purchasing a ticket to New Orleans in order that advantage may be taken of the reduced rate if a sufficient number of tickets is purchased.

American Students in British Medical Schools

For several years past much has been said about the large numbers of American students who had attempted to enter British medical schools, probably due, in large part, to the fact that owing to the limitation of numbers by American schools, necessitated by the inadequacy of equipment beyond a certain number of students, many students who found it impossible to gain admittance to a school in this country sought admission elsewhere. Most of these applications were made to British schools, especially those located in Scotland.

An attempt has been made to secure exact numbers by getting into communication with each British school directly through the General Medical Council of Great Britain. Each school sent its data to the G. M. C. and then they were forwarded to this Association. For the sake of ready reference, the figures have been tabulated and they are offered without comment. As this information was given out during June and July and received during August, it is not only correct and authentic, but recent.

Some colleges could not give exact figures as no records were kept. All are agreed, however, that the number of inquiries for information were very much in excess of the number of actual applications received, and many applications were not acted on at all because of their incompleteness, hence could hardly be considered real applications.

There has been a real tightening up in Great Britain this year because of the fact that it was felt that the best of our

students were not applying to their schools. Since February 1, 1931, all applications received by the G. M. C. have been sent to this Association for evaluation and further data on the eligibility and acceptability of the applicant. It is said that this work has been most helpful to them.

DATA ON AMERICAN STUDENTS APPLYING FOR ADMISSION TO MEDICAL SCHOOLS OF GREAT BRITAIN

Name of School	Applied 1930	Applied 1931	Accepted 1930	Accepted 1931	Matriculated 1930
University of Aberdeen	305	151	0	0	0
University of Glasgow	112	139	12	12	9
University of Edinburgh	235	228	12	—	5
University of St. Andrews	—	—	84	—	
Royal Colleges School of Medicine	—	—	25	—	25
Anderson College of Medicine	—	100	45	34	—
St. Mungo's College Medical School	100	—	4	—	4
University College—Galway	—	—	0	0	0
National University of Ireland	—50—		3	—	3
University College—Dublin*					
Queen's University—Belfast	30	—	1	—	—
University of Dublin (Trinity College)	—	54	5	0	5
University College of North Wales‡	0	0	0	0	0
Welsh National School of Medicine	—	15	0	0	0
University of Manchester†	—	81	0	0	0
University of Sheffield	30	17	3	1	1
University of Liverpool	—	139	1	0	0
University of Oxford	—	2	0	0	0
St. Thomas Hospital Medical School	?		0	0	0
Guy's Hospital Medical School	—53—		2	2	2
St. Mary's Hospital Medical School	—	26	7	0	7
University of Bristol	47	26	23	6	2
University of Durham College of Medicine	78	13	22	1	5
University of Birmingham Faculty of Medicine	—	21	3	3	0
St. Bartholomew's Hospital Medical College	108	59	6	1	0
University of Leeds	0	0	0	0	0
University of London					
University College Hospital Medical School	—	—	0	0	0
Middlesex Hospital Medical School	50	60	2	0	—
Charing Cross Hospital Medical School	—	50	16	0	—
Westminster Hospital Medical School	79	16	3	0	—
St. George's Hospital Medical School	?	?	3	0	3
King's College Hospital Medical School§	55	?	12	0	6
London Hospital Medical College	—	23	2	0	—
	1229	1218	295	60	77

*Included in National University of Ireland report.

‡Teaches first two years only.

†Americans not admittted.

§24 entered through associated hospitals.

Teaching of Anatomy

In a paper read before the Association of American Medical Colleges, June 3, 1901, by the late Carl A. Hamann, then professor of anatomy in Western Reserve University, he offered the following proposition:

1. Anatomic teaching should extend over three years of the medical course.

2. Those parts of the subject should be taught which will be of most use to the future practitioner; instruction should, therefore, be of a practical nature rather than theoretical and purely scientific.

3. Dependence should be placed on demonstrations and recitations rather than didactic lectures; and above all, the dissecting room should be regarded as the place to learn anatomy.

4. Instruction in applied anatomy should be given by a competent anatomist who is also a practitioner.

Internships

The Michigan State Board of Registration in Medicine recently adopted a rule under which two years' service on the staff of an approved hospital for tuberculosis or for mental disease will be accepted in lieu of a one-year rotating internship in a general hospital.

Our Post-Convention Caribbean Cruise

In the July and September Journal we announced that a special Caribbean Cruise was available for members of the Association, their families and friends, sailing from New Orleans on one of the famous Great White Fleet cruising steamers, the SS. Parismina, immediately following the close of the forty-second annual meeting on December 2nd.

The cruise has been shortened one day so that the trip will now be of eight days duration instead of nine days. The schedule has also been made more attractive with a call at Puerto Barrios, Guatemala instead of Puerto Castilla, Honduras. The complete itinerary is as follows:

Leave New Orleans, Dec. 2, P. M.; arrive Havana, Cuba, morning of Dec. 4; leave Havana, Cuba, Dec. 4, P. M.; arrive Puerto Barrios, December 6, P. M.; leave Puerto Barrios Dec. 7, A. M.; arrive New Orleans Dec. 10, P. M.

The cost of this cruise on the all-expense plan New Orleans to New Orleans is $95.00 first class, the only class carried on the steamers, which includes accommodations with meals in a large double outside stateroom, deck chairs, and an elaborate shore program at Havana. While no shore program is included at Puerto Barrios, Guatemala, the passengers will have time to browse around this quaint and interesting Central American port.

A special feature of the cruise is a visit to the Medical College of the University of Havana, which should be of interest to all of the members of the Association.

The accommodations on the steamer are limited to 80 passengers. It is suggested that those planning to participate in this outing, immediately write for reservations. Assignments of space will be made in the order in which they are received.

College News

University of California

It is reported that the Associated Students of the University of California have turned over to the University not inconsiderable sums of money received from last year's football profits for the continued support of research by the university physician and the department of botany on the cause and cure of epidermomycosis, commonly known as "athlete's foot," or "golf foot."

It is the policy of the Associated Students to use football profits not required for the support of athletics and physical education for other projects of fundamental value to the university and to the state. At the present time the major part of such profits is being expended in support of the $2,000,000 campus expansion and improvement project now under way.

Emory University School of Medicine

The medical faculty of Emory will have professional supervision of Grady Hospital in all of its departments, according to the terms of an agreement entered into by the hospital trustees and Emory. This agreement will include the white unit of the hospital and the Steiner Cancer Clinic.

The business administration will remain in the hands of the hospital trustees.

For many years Emory has done much of its clinical teaching in the colored unit of Grady Hospital.

Members on the staff of the hospital were added to the teaching faculty, all appointments being for one year only.

Duke University School of Medicine

New appointments: Angus M. McBryde, instructor in pediatrics; Walter B. Mayer, assistant in medicine; Harold Finkelstein, assistant in surgery; Anne Lawton, assistant in pediatrics; Morton F. Mason, assistant in biochemistry.

In October, for the first time, all four classes of students were enrolled in the medical school, with 60 in the first year class; 49 in the second, 18 in the junior and 18 in the senior class, making a total of 145 students. The 78 students admitted in 1931 come from 53 colleges and universities. Forty-one are from North Carolina and 37 from twenty-two other states.

The first class will be graduated in June, 1932.

Fourteen wards in the Duke Hospital have been named for men prominent in medical history: Welch, Osler, Nott, Drake, Reed, Halsted, Strudwick, Long, Howland, McDowell, Cabell, Sims, Prevost and Campbell.

Woman's Medical College

Faculty appointments: Sarah I. Morris, acting professor of preventive medicine; S. Brandt Rose, professor of bacteriology and director of the clinical laboratory of the hospital; Allan P. Parker and Herbert H. Fritz, instructors in surgical anatomy; Wm. T. Lemmon, instructor in surgery; Mary E. Howe, instructor in anatomy.

Dr. Helen Wastl, of the Physiologic Institute of Vienna, has been appointed acting professor of physiology.

Cornell University Medical College

New appointments: Eugene L. Opie, professor of pathology, to succeed James Ewing who retires after thirty years of teaching to devote his time to the study of cancer; Herbert S. Gasser, professor of physiology, to succeed Graham Lusk,

who retires after 40 years of teaching; Jas. M. Neill, professor of bacteriology and immunology, succeeding Wm. J. Elsner, who will continue as head of the department of applied pathology and bacteriology; George S. Amsden, professor of psychiatry.

Marquette University School of Medicine

Construction work was started September 15 on the new $500,000 building to be erected on the university campus.

The building will be similar in design to the other newer Marquette structures, and will be of collegiate Gothic architecture of reinforced concrete, walled with orange buff brick. It will include a semi-basement or ground floor, and four stories.

The building will have a frontage of 260 feet, and including its double wings will run back 125 feet. It will be joined to the dental building erected in 1922.

An auditorium with a capacity of 500 will be located on the first floor of the north wing, and the wings also will include seven laboratories for the various departments, and two large lecture halls. There also will be two classrooms.

The main section will feature a library, pathology museum, anatomy museum, X-ray department, art room, eye clinic, students' health service, offices, lecture rooms and a lounge. A penthouse will run the length of the roof of the main section.

The building will be ready for occupancy in the fall of 1932.

New York Hospital Staff Organization

Plans provide for five divisions, medicine, surgery, obstetrics and gynecology, pediatrics and psychiatry, each headed by a chief staff, who will also hold an appointment in Cornell University Medical College, with which the hospital is affiliated. Each department staff will consist of a central group of physicians on a full time basis and a larger affiliated group of men who are also engaged in private practice. Departments of public health and social service are also to be important parts in the staff organization.

Columbia University Graduate Courses in Neurology and Psychiatry

Three courses in neurology and psychiatry are to be offered during the coming academic year to graduate students and other professional groups interested in these subjects by Columbia University College of Physicians and Surgeons in collaboration with the Neurological Institute of New York and the New York State Psychiatric Institute and Hospital.

During the ten weeks from September 28 to December 5, two alternate series of courses, one devoted principally to psychiatry and the other principally to neurology, will be offered. Among the officers of instruction will be Drs. Abraham A. Brill, Louis Casamajor, Charles A. Elsberg, Bernard Glueck, Samuel T. Orton and Frankwood E. Williams.

Beginning Jan. 25, 1932, a semester course in neuropathology will be given by Dr. Armando Ferraro, research associate in neuropathology at the Psychiatric Institute and Hospital.

Information concerning these courses may be obtained from Dr. Howard W. Potter, Psychiatric Institute, 722 West One Hundred and Sixty-eighth Street, New York City.

New York Homeopathic Medical College

By the will of the late Dr. John E. L. Davis, the college will receive the sum of $250,000.

University of the Philippines

The trustees of the university have closed the College of Dentistry because disputes had destroyed the usefulness and efficacy of the school.

University of Chicago

Mrs. Anna Louise Raymond has given the university the net income from $16,000 for two scholarships in the medical school to be known as the James Nelson Raymond scholarships. These scholarships will be awarded to worthy students who are in need of financial assistance.

University of Illinois College of Medicine

The Charles Sumner Bacon Lectures (third series) were given by Dr. Herbert M. Evans, professor of anatomy, University of California, October 8 and 9. The general subject of the lectures was "The Function of the Anterior Hypophysis." Bernard Fantus has been appointed professor of therapeutics.

The college of medicine opened October 5. All departments are now housed in the magnificent new buildings located at 1853 Polk Street. These buildings are of the latest design and will accommodate 200 students in each class. The laboratories are contiguous with the Research and Educational Hospital which has a capacity of 500 beds. Three hundred and sixty of these beds are occupied at the present time and are used exclusively for research and teaching purposes.

In addition to the Research and Educational Hospital, the large State Department for Juvenile Research is closely affiliated with the College of Medicine and offers a wealth of material of psychologic and neurologic studies. A Psychiatric Institute with 62 beds and an Orthopedic Institute for children with 100 beds have also been opened. It has been necessary to limit the number of dispensary patients to 100,000 per year.

The library and reading rooms have been enlarged to keep pace with the growth of the college. Reading rooms have a seating capacity of 500. The library has more than 40,000 volumes which includes complete files of practically all clinical and biological research journals.

University of Alabama School of Medicine

Faculty appointments: Allen D. Keller, Ph.D., professor of physiology and pharmacology; Franklin S. DuBois, M.S., M.D., assistant professor of anatomy and acting executive of the department; Gene H. Kistler, M.S., M.D., assistant professor of physiology and pharmacology, assistant in medicine; Marie C. D'Amour, Ph.D., instructor in physiology and pharmacology.

Promotions: Ralph McBurney, A.M., M.D., M.P.H., professor of bacteriology and hygiene, assistant in medicine; Allan W. Blair, M.D., assistant professor of pathology and bacteriology, instructor in surgery; Eleanor A. Hunt, Ph.D., assistant professor of microscopic anatomy; Luney V. Ragsdale, M.D., assistant clinical professor of medicine; John McLaughlin Forney, M.D., assistant clinical professor of obstetrics.

Medical College of Virginia

It is announced that construction on the new College Library building will be started shortly. This building will also house the Richmond Academy of Medicine. It is another of the structures embraced in the medical center which is planned by this institution.

University of Pittsburgh

The Falk Clinic was dedicated September 28. The Falk Clinic is one of the group of buildings to be known as the Pittsburgh Medical Center. It was erected at a cost of about $1,000,000, contributed by Messrs. Leon and Maurice Falk, and provides modern equipment for the diagnosis and treatment of ambulatory patients and for teaching. On the first floor are the children's department, the dental and pharmacy departments, and the board and staff rooms; on the second floor are the departments for the treat-

ment of diseases of the nervous system, heart and kidneys, the diet kitchen, a special roentgen department, and demonstration and lecture space; the third floor contains the department for the treatment of crippled children, the women's department, and the general surgical division, where minor operations will be performed. A large public lecture hall is provided on the fourth floor.

Temple University School of Medicine

William N. Parkinson, dean, announces the opening of the school of medicine on September 30, with a total enrollment of 450 students, the largest in the history of the institution. The freshman class of 116 students, 104 of whom are Pennsylvanians, was selected from approximately 2,000 applicants.

A new department of physical medicine, consisting of a suite of eleven rooms, was recently opened in the Temple University Hospital. The department is in charge of Dr. Frank H. Krusen, associate dean of the School of Medicine, his assistant, Dr. Frank Follweiler, and a staff of technicians.

Columbia University

Bard Hall, a $2,500,000 men's residence hall given to the Medical Center of Columbia University by Edward S. Harkness, was to receive its first students October 1. The building was named in honor of Dr. Samuel Bard, for forty years connected with King's College, later Columbia, as its first professor of medicine, trustee and dean of the medical faculty. The dormitory is on Haven Avenue just above Riverside Drive, near One Hundred and Sixty-eighth Street. It rises eleven stories on the Haven Avenue side, with three additional stories below that level on the west side sloping toward the Hudson River. It contains 235 rooms for students and ten suites for instructors.

Syracuse University College of Medicine

With the assistance of the Milbank Memorial Fund, a department of public health nursing was opened recently. The course demands two semesters of college work and experience in the field. Courses are offered in public health administration; preventive medicine; mental hygiene; public health nursing; child hygiene; school nursing and industrial nursing.

Jefferson Medical College

The opening exercises of the 107th annual session were held September 23rd, in the Assembly Hall of the college. Mr. Alba B. Johnson, president of the Board of Trustees, presided. The introductory lecture was delivered by Dr. Charles E. G. Shannon, professor of ophthalmology, on "The Soul of Medicine."

Dr. Ross V. Patterson, dean of the college, welcomed the 585 students. Of this number, 160 are in the first-year class.

The members of the first-year class were prepared for medical study in 66 different colleges and universities. Approximately 2,250 students requested information as to the conditions under which they could be admitted to the first-year class. The 160 men who make up the class were chosen from 976 applicants who submitted formal certificates of preliminary education. A college degree requirement has been enforced, for the first time, against those admitted to the first-year class.

Promotions and additions to the faculty: Edward J. Klopp and Thomas A. Shallow, professors of surgery; George Russell Bancroft, professor of physiological chemistry and toxicology; Elmer H. Funk, professor of therapeutics, materia medica and diagnosis; Charles F. Nassau and Arthur E. Billings, clinical professors of surgery; George A. Ulrich, clinical

professor of obstetrics; Michael A. Burns, associate professor of nervous and mental diseases; Arthur J. Davidson, associate professor of orthopedic surgery; H. Hunter Lott, assistant professor of laryngology; A. Spencer Kaufman, assistant professor of otology; Benjamin P. Weiss, assistant professor of nervous and mental diseases; James R. Martin, assistant professor of orthopedic surgery; B. B. Vincent Lyon, assistant professor of medicine; Collin Foulkrod, assistant professor of obstetrics; Lorenz P. Hansen, assistant professor of physiological chemistry.

Francis E. Weatherby, Major, M. C., U. S. Army, a graduate of the Jefferson Medical College, Class of 1913, has been assigned by the War Department as professor of military science and tactics, following the retirement of Major Frederick H. Mills.

University of Texas School of Medicine

New appointments: Ellen D. Furey, adjunct professor of pathology, succeeding Harry L. Klotz; John F. Pilcher, instructor in pathology; Wilbur A. Senglemann, instructor in anatomy, and William W. Bondurant, Jr., instructor of clinical medicine.

Indiana University School of Medicine

Willis D. Gatch, professor of surgery, has taken over the duties of acting dean for the school year 1931-1932. Dr. Charles P. Emerson, the dean, has been given leave of absence to spend about ten months in the Far East as a member of a commission which will appraise and evaluate facts on foreign missions. Dr. Henry S. Houghton, dean of the State University of Iowa College of Medicine, Iowa City, is also a member of the commission. Frederic Woodward, LL.D., vice president and dean of faculties of the University of Chicago, is vice chairman and head of the group which sailed September 29. Dr. Emerson and Dr. Houghton will pay particular attention to the medical missions, schools and hospitals of the Asiatic countries.

University of Maryland School of Medicine

Faculty changes: William H. Toulson, to professor of genito-urinary diseases; Page Edmunds, to professor of clinical and industrial surgery; Walter D. Wise, Frank S. Lynn, Elliott H. Hutchins, Charles Reid Edwards and Nathan Winslow, to professors of clinical surgery; Harry M. Robinson, to professor of clinical dermatology; James Dawson Reeder, to clinical professor of diseases of the colon and rectum; Charles C. Habliston, to associate professor of medicine; Ralph C. P. Truitt, to associate professor of psychiatry; Herbert M. Foster, to associate professor of surgery.

The organization of a department of neurosurgery was recently announced. Dr. Charles Bagley, Jr., will be in charge of the new division and Dr. Richard G. Coblentz will be associate.

University of Manitoba Faculty of Medicine

George W. Fletcher has been appointed professor of otolaryngology to succeed the late S. W. Prowse.

Two new buildings are being erected by the university on the campus, an arts building and a science building. The inaugural address to the medical students was delivered by O. Bjornson, professor of obstetrics and president of the Manitoba Medical Students Association.

Harvard Medical School

According to the *New England Journal of Medicine* (Oct. 5, p. 787), thirty-three scholarships for the academic year 1931-1932 have been awarded by this medical school.

General News

King's College, London

William D. Halliburton, emeritus professor of physiology in King's College, provided in his will that on the death of his wife $50,000 go to the University of London, King's College, for endowment or towards the salary of the professor in physiology or the sciences related thereto.

Beit Memorial Fellowship for Medical Research

This trust was founded twenty years ago by Sir Otto Beit to perpetuate the memory of his brother, Alfred Beit. Twenty-three fellows are at present working on the Foundation. Each fellow chooses his own problem for research. When the Foundation was started, the fellows were to work chiefly in the laboratories and schools attached to the University of London, but each year more and more fellows are being permitted for special purposes to work abroad for the year. The aim of the fellowship is to start a man on a career of research.

Besides six junior fellowships valued at $2,000 a year, one senior fellowship valued at $3,500 a year has been awarded. One fourth year fellowship is valued at $2,500 a year.

Enrollment in Engineering Schools

There has been a 45 per cent increase in enrollment in engineering schools during the past five years. In 1930-1931, the 145 schools enrolled 78,685 students, of whom 12,161 were undergraduate seniors and 2,939 were students of graduate engineering. The problem of the placement of the graduates in engineering becomes more difficult year by year. Only 38.2 per cent of the graduates of eighty-eight schools were placed this year. Only 33.4 per cent of the electrical group were placed; 41 per cent of the mechanical group; 37.5 per cent of the civil group; and 46.3 of the chemical group; 45.1 per cent of the mining group and 44.2 per cent of the industrial group. It is stated that more than 50 per cent of the undergraduates do not reach the senior year.

Sir Ronald Ross Celebration

The thirty-fourth anniversary of the discovery by Sir Ronald Ross of the transmission of malaria by the anopheles mosquito was celebrated in London last August. The principal addresses were delivered by Dr. William H. Welch of Johns Hopkins University and Mr. John Masefield, poet laureate of Great Britain.

Payne Whitney Bequest

In the will of Payne Whitney the New York Hospital received $21,691,593; Cornell University, $3,286,605 and to trustees for charitable and educational purposes, $30,236,766.

Simon Guggenheim Memorial Foundation

New members on the advisory board are Thomas Barbour, professor of zoology and director of the museum of comparative zoology in Harvard University, and Florence R. Sabin, member of the Rockefeller Institute for Medical Research.

Loans for Medical Education

The editor of the *Journal of the Indiana State Medical Association*, October, 1931, suggests that an unusual opportunity is given the man who has a little money for which he has no safe place

for investment. The loan of $500 a year for four or five years, made to an honest and enterprising young man for the purpose of getting or completing a medical education, is a gilt edge investment. The student should be required to take out life insurance covering at least the amount of the loan.

New Medical School in Boston

The *New England Journal of Medicine* (Oct. 14, 1931) makes mention of the opening of a "new" medical school in Boston. The new school proposes to give instruction in medicine in the state of Massachusetts and to confer the degree of M. D. in Rhode Island. The name of the school is to be The College of Medicine and Surgery of the International University. It will be located at 510 Columbus Avenue, Boston. The activities of the college are to be carried on in Massachusetts under authorization given the Progress Alliance, Inc., under the laws of that state, and the International University, incorporated under the laws of Rhode Island.

Two years of premedical work is the requirement for admission, followed by a four year course leading to the degree of M. D., and then a year of internship, or its equivalent, is required after the student receives the degree of M. D. Evening classes will be conducted to supplement the day classes for students who may be conditioned in one or more subjects or to make up time lost on account of sickness, etc.

Instruction will be on the four quarter basis; 36 weeks constitute one college year. The combined degree of B. S., M. D., will be granted after six years of work. The degree of D. P. H. may be obtained by attending the postgraduate course in the department of public health.

Information regarding educational facilities, clinics and laboratory work, is very meager and indefinite. The faculty is not named. The statement is made that the dean "is assisted by an able faculty of professors and instructors in modern medicine and surgery."

Physical Therapy

The Council on Physical Therapy of the American Medical Association has recommended that medical schools provide for a course in physical therapy extending over a period of thirty-two hours.

Dorothy Temple Frost Scholarships

The Medical Research Council of London, England, has awarded fellowships for 1931-1932 for research in tuberculosis to Charles Allan Birch, senior medical registrar and tutor in the Royal Infirmary, Liverpool; and Roy Lars Vollum, demonstrator in pathology in Oxford University.

Lectures on Medical History

A course of six lectures and a seminar course are being given at Johns Hopkins University School of Medicine during October and November by Dr. Henry E. Sigerist, professor of the history of medicine and director of the Institute of the History of Medicine of the University of Leipzig. Dr. Sigerist has been appointed visiting lecturer in the history of medicine at the school during the academic year 1931-1932.

Personals

Herman Prinz, professor of pharmacology in the University of Pennsylvania School of Medicine, delivered a course of lectures in July at the University of Frankfurt, Germany.

Edwin C. Honiblen has been appointed associate professor of obstetrics and gynecology in Duke University School of Medicine.

Charles Phillips, professor of pathology in the Medical College of Virginia, has resigned to accept the position of director of laboratories in a professional clinic.

Leroy Long, dean of the School of Medicine of the University of Oklahoma, resigned recently in protest to the fiat of the governor that chiropractors be allowed to practice in the university hospital.

Robert G. Torrey, associate professor of medicine in the University of Pennsylvania Graduate School of Medicine, has been appointed professor of medicine in the Woman's Medical College.

Howard H. Beard, assistant professor of biochemistry in Western Reserve University School of Medicine, has been appointed professor of biochemistry in the Louisiana State University School of Medicine.

H. J. Gerstenberger, professor of pediatrics in Western Reserve University School of Medicine, addressed the German Pediatric Society in Dresden last September.

John McIntyre Nokes, instructor in obstetrics and gynecology in Vanderbilt University, has been appointed assistant professor of obstetrics and gynecology in the University of Virginia.

Lewis J. Moorman, professor of clinical medicine in the School of Medicine of the University of Oklahoma, was appointed dean by Governor Murray to succeed Leroy Long who resigned recently.

Eben J. Carey, professor of anatomy in Marquette University School of Medicine, has been appointed director of medical exhibits for the Century of Progress exposition to be held in Chicago in 1933.

The Baly medal of the Royal College of Physicians, London, was conferred on Walter B. Cannon, professor of physiology in Harvard Medical School for his contributions to physiology in the past two years.

The University of Budapest has conferred the honorary degree of doctor of medicine on Harvey Cushing, professor of surgery in Harvard Medical School.

David L. Edsall, dean of Harvard Medical School, has been appointed a member of the committee of medical experts which is to cooperate with Dr. A. W. Stearns, commissioner of correction of Massachusetts and dean of Tufts College Medical School, in carrying out a program designed to rectify the delinquencies of state prisoners by physical rehabilitation.

Allen F. Stone has been appointed chief of the department of surgery in the University of Maryland and surgeon-in-chief of the James Lawrence Kernan Hospital for the Crippled.

William R. Amberson, professor of physiology in the University of Pennsylvania, will work in the laboratory of Professor Rudolph Hoeber in Kiel during the coming semester.

Harvey Cushing, Moseley professor of surgery in Harvard Medical School, received an honorary degree from the University of Berne at the opening of the International Congress of Neurology.

Joseph B. Wolffe, associate professor of cardiology in the School of Medicine, Temple University, was honored recently by members of the staff of his heart clinic who entertained him at a testimonial dinner.

Joseph L. Johnson, Philadelphia, has been appointed head of the department of physiology in the School of Medicine of Howard University.

Clarence O. Cheney has been appointed professor of psychiatry in Columbia University.

Herbert R. Unsworth has been appointed assistant professor of neuropsychiatry in the Louisiana State University Medical Center.

Franklin G. Ebaugh, professor of psychiatry in the University of Colorado School of Medicine, will make a survey of teaching in psychiatry in all medical colleges for the National Committee for Mental Hygiene.

Orlando H. Pitty, professor of diseases of metabolism in the University of Pennsylvania Graduate School of Medicine, has been appointed director of the department of public health of Philadelphia.

Nathan P. Colwell, secretary of the Council on Medical Education and Hospitals of the American Medical Association since 1906, who has been on leave for many months on account of illness, was permanently retired by the Board of Trustees in September.

Howard T. Karsner, professor of pathology in Western Reserve University School of Medicine, has been appointed a member of the Council on Physical Therapy of the American Medical Association to succeed the late Alfred S. Warthin.

Roy B. Barrick, assistant professor of psychiatry in the State University of Iowa College of Medicine, has been appointed assistant professor of criminology in the College of Medicine of the University of Illinois.

Allen F. Voshell, associate professor of orthopedic surgery in the University of Virginia, has resigned to become head of the department of orthopedic surgery in the School of Medicine of the University of Maryland.

Wann Langston, formerly the superintendent of the university hospitals in Oklahoma City, has been appointed professor of clinical medicine in the School of Medicine of the University of Oklahoma.

Edward A. Strecker, formerly professor of nervous and mental diseases at Jefferson Medical College, has been appointed professor of psychiatry in the School of Medicine of the University of Pennsylvania.

Ernst Gellhorn has been promoted from associate professor to professor of physiology in the University of Oregon School of Medicine.

Lieutenant Commander Franklin F. Murdock, U. S. N., acting executive officer of the Naval Medical School, has

accepted the professorship in tropical medicine in George Washington University School of Medicine.

H. J. Gerstenberger, professor of pediatrics in the School of Medicine of Western Reserve University, was elected to honorary membership in the German Pediatric Society. He is the second American to be so honored.

Clarence B. Farrar, professor of psychiatry in Toronto University, has been elected editor of the American Journal of Psychiatry, succeeding Edward N. Brush who has retired.

Russell M. Wilder has resigned his position as professor of medicine at the University of Chicago to join the staff of the Mayo Clinic and the Faculty of the Mayo Foundation Graduate School of the University of Minnesota as professor of medicine.

Sir Thomas Lewis, London, gave the first Frank Billings Lecture of the Thomas Lewis Gilmer Foundation, October 31, on "Pain in Muscular Ischemia and Its Relation to Anginal Pain."

Charles S. Robinson, Ph.D., director of the chemical division of the Michigan Experimental Station, East Lansing, has been appointed professor of biochemistry at the Vanderbilt University School of Medicine, Nashville. He succeeds Glenn E. Cullen, Ph.D., who resigned September 1 to become director of laboratories at the Institute of Pediatric Research of the University of Cincinnati Medical School.

Wade C. Oliver, professor of bacteriology in Long Island College of Medicine, has returned after an absence of eighteen months spent mostly in the Medical School of the University of the Philippines where Dr. Oliver was sent by the Rockefeller Foundation for spe- study and researches.

Douglas R. Drury of Harvard University has been appointed professor of physiology in the School of Medicine of Southern California.

A. T. Cameron, professor of biochemistry in the University of Manitoba, has been elected president of the Canadian Institute of Chemistry.

Leslie T. Gager, clinical associate in medicine at George Washington University School of Medicine, has been appointed professor of medicine and head of the department at Howard University.

The twenty-fifth anniversary of Walter B. Cannon as George Higginson professor of physiology in Harvard University, was celebrated October 15 by public exercises held in the Harvard Medical School. A portrait of Dr. Cannon was presented to the school. Addresses were delivered by Walter C. Alvarez, Wm. H. Howell and Graham Lusk.

William S. Ladd has been appointed associate dean of the Cornell University Medical College. Dr. Ladd has also been appointed assistant professor of medicine.

John T. McClintock will serve as acting dean of the State University of Iowa College of Medicine for the next year while the dean, Henry S. Houghton, is on leave of absence, visiting India, China and Japan as a member of the Institute of Religious Research.

Albert M. Bleile, professor of physiology at Ohio State University College of Medicine, Columbus, has retired from active service with the rank of professor emeritus. He has been connected with the university for fifty-two years.

Deaths

Aristides Agramonte, for thirty years professor of bacteriology and experimental pathology at the University of Havana Faculty of Medicine and Pharmacy, died in New Orleans, August 18, of heart disease and bronchitis, aged 63.

David Ross, associate professor of surgery in Indiana University School of Medicine, died in August, aged 65, of toxic encephalitis, influenza and pneumonia.

Horace H. Jenks, assistant professor of pediatrics, University of Pennsylvania Graduate School of Medicine, died of bronchopneumonia, aged 53.

Joseph E. Johnson, assistant professor of surgery in the College of Medicine of the University of Tennessee, died recently, aged 59.

John B. Deaver, emeritus professor of surgery in the University of Pennsylvania School of Medicine, died recently, aged 70.

Norman B. Carson, professor emeritus of surgery in Washington University Medical School, died in August, aged 86.

Robert Caldwell, professor of clinical surgery in Vanderbilt University School of Medicine, died of coronary thrombosis, aged 57.

Joseph J. McGrory, assistant clinical professor of surgery in Loyola University School of Medicine, died of myocarditis, chronic nephritis and diabetus mellitus, aged 59.

David Starr Jordan, president emeritus of Stanford University, died in September, aged 80.

Arthur Simard, professor of surgery in Laval University, Quebec, died in September, aged 63.

Abstracts of Current Literature

Data on Medical Students for 1930-1931

Number by Classes: The total number for the first year was 6,456; for the second year, 5,538; for the third year, 5,080; while in the fourth year there were 4,908.

Fifth Year Students: The eleven medical colleges which require a fifth, or intern, year before the M.D. is conferred, had 1,025 fifth year students enrolled.

Women Students: There were 990 women students, an increase of 35 over the previous year.

Negro Students: There were 510 negro students, 6 less than the previous year.

Medical Graduates: The total number of graduates for the session 1930-1931 was 4,375, 170 more than in 1930.

Repeaters: There were no students repeating courses in 15 medical colleges and 7 schools had students repeating only in the first year.

There were 26 schools which accepted a total of 45 failures from other schools (25 were freshmen, 14 sophomores, 4 juniors and 2 seniors), but in most instances compelled them to repeat the courses in which they were deficient. Seven students were given advanced standing after having failed in another school.—*J. A. M. A.*, Aug. 29, 1931.

Tuition and Cost of Education

In the ten years from 1907-1908 to 1917-1918 the average tuition fee at twenty-one leading colleges and universities advanced only $32, from $125 to $157; in the next five years the increase of the average tuition was $82. In the past twenty-four years, the average tuition fee at these twenty-one representative colleges and universities has increased from $125 to $362, a gain of 190 per cent.

The farther up the scale of education one goes, the higher is the per capita cost. In the public school system in Philadelphia, the average cost of educating a student in the elementary schools is $77.28; in the junior high schools, the cost is $113.15; in the senior high schools, $176.36; and in the normal schools, $283.40. In two most important undergraduate schools at the University of Pennsylvania, the Wharton School and the College, the per capita costs are $368.08 and $512.38, respectively; and in medicine, which is a typical example of graduate and professional education, the cost of educating a student is more than $1,000 a year. It costs the University of Pennsylvania $1,412.52 to educate a student to a degree of B.S. in Economics; if it is a B.S. degree in Architecture that the student is studying for, his four-year course costs the university $2,694.74; while a B.S. in Mechanical Engineering costs the university more than $6,000.

Suppose the University of Pennsylvania were to charge to each student the actual cost of his education rather than the flat rate of $400 which obtains in all of the schools outside the field of medicine. In the college we should have to charge $512, in architecture $554, in veterinary medicine $783, in medicine $1,031, and in most of the engineering work well over $1,000. Even then we should not be charging the full cost, for these figures do not take into account depreciation of plant, interest on investment, and certain other factors. What the actual percentage is that the student pays depends on what costs are considered to be educational costs. Should research be considered an educational cost? Should the operation of a museum?

The total budget for all activities of the university in a year is about $8,000,-

000. The income from tuition fees totals about $2,750,000 and dormitory and departmental income about $1,000,000, or less than half the cost of operating the university. But not all of the remaining half could, by the widest stretch of the imagination, ever be charged to the students, since included in that part are many activities from which the student derives little or no direct benefit. Roughly, it is probably true that above $4,000,000 of our budget of $8,000,000 is the cost of education in the strictest sense, and on this basis the student pays between half and three-quarters of the cost. At other institutions, the student pays half the cost of his education, which is virtually equivalent to his paying the salaries of the faculty.—GEO. A. BRAKELEY, *Educational Record*, July, 1931.

Contribution to Education of Boards and Foundations

About $2,500,000,000 is given to philanthropy in this country every year. For 1927, they were $2,100,000,000, so I presume there has been that increase in the meantime. Probably only about one-fortieth, speaking very roughly, of all the gifts for philanthropic purposes in this country a year come from Foundations and Endowment Boards. Generally speaking, there are about 200 Foundations, and it is estimated that their total endowment is about one billion, one thousand million dollars, with an annual income of say fifty million dollars, and giving away perhaps ten or twenty million more from principal.—A. P. STOKES, *Educational Record*, July, 1931.

Teaching of Psychiatry

. . . data relating to the teaching of psychiatry were collected from the medical school catalogues of 1930. The hours devoted to neuro-anatomy and neuropathology were not included. Of the two schools that offered no courses in psychiatry, one required 50 hours and the other 103 hours of neurology. In the 23 schools offering less than 50 hours of psychiatry, most of them offered more than the usual amount of work in neurology. Twenty-five schools offered between 51 and 100 hours; 12 schools offered between 101 and 150 hours.

Twenty-six hospitals offer services in nervous and mental diseases; 67 hospitals are affiliated with nervous and mental hospitals for intern service, and 66 special hospitals which offer residencies in psychiatry or neuropsychiatry. A few others offer externships to junior and senior medical students in the vacation periods.—*J. A. M. A.*, Aug. 29, 1931, p. 617.

Larger Tuition Fees

I do not see how we can say that tuition fees should, for example, be doubled. The laws of economics, and particularly that of supply and demand, will operate on college and university education as on all other commodities. And it will undoubtedly come about that a top will be reached beyond which the institutions cannot go without losing enrollment, cutting down receipts, and thus defeating the purpose of increasing income. At that point tuition increases will have to stop. If certain institutions then cannot stand the competition for quality which the better endowed and the state universities set as the pace, they will be required either to accept positions as second rate institutions or close their doors.

We may reach the point where only the most heavily endowed universities and the state universities can survive, but it is my hope that society will continue to give to the cause of education and research for many years to come so that the colleges and universities may continue to provide for students a better education than most of them could pay for. Rather than raise the rate to the last dollar which can be extracted from the student, I think our job is to give our students the best possible education, a sense of their responsibility to society,

and such a sense of gratitude for what they have been given at less than cost, that they will constitute as alumni a large source of support for our institutions, either through annual gifts for current expenses or capital gifts of endowment. —GEO. A. BRAKELEY, *Educational Record*, July, 1931.

White House Conference Committee on Prenatal and Maternal Care. Fundamental Training.

It is possible that the future selection of men for the medical profession may be made on more careful scrutiny of their moral and intellectual qualifications with attention to their adaptability to the geographic, social and economic needs of various districts and to types of medical practice.

Appropriate, but sometimes ineffectual, attempts are made to select medical students from the standpoints of ability and character.

It is undisputed that there should be sufficient preliminary training of those with native ability in cultural, humanitarian and scientific knowledge prior to entrance into the medical college. Here instruction should be given in the preclinical basic sciences and be correlated with the subsequent clinical teaching. There should be a closer interrelationship between the preclinical sciences and the clinical branches of medicine by a keener interest of those teaching the basic sciences, in clinical facts, and of those teaching the clinical branches, in the fundamental sciences.

The curriculum should not be so sharply set off between the first and second biennium. It is probable that more dovetailing would be advantageous to both student and teachers.

The student should also be impressed with the idea that these basic sciences are requisite foundations to be utilized in his life's work. This could be accomplished by showing the relationship to the human being, by convincing the student that he is not working for credits and simply accumulating facts to be retained only until sufficient credits are obtained. Doubtless one of the best means of impressing this idea is by means of the comprehensive examination which could be required as a preliminary step to entrance into the work of the clinical years, when definite efforts should be made to keep up the contact of the students with some one or more of the basic sciences. This applies to all undergraduate students and to those who are taking postgraduate training, but it is of particular importance to those who by serious and intensive graduate work are preparing themselves for specialized private practice and especially to the smaller group who plan to take up careers as teachers and investigators. — FRED L. ADAIR, *Am. J. Obst. & Gyn.*, June, 1931, p. 773.

Education in Obstetrics

It has been reported that the facilities for the education of physicians in obstetrics have not been adequate. The lack has not been so much along the line of theoretical training as it has in the application and especially in the clinical advantages. There can be no good obstetric practice in any country unless the doctors are thoroughly educated as well-trained obstetricians. This is the key to the situation.

The obstetric education of physicians must satisfy several demands which are essential to the best interests of maternity and infancy. In general, medical education must fill the needs of the country as a whole. There are many sections of the country where small communities and sparsely settled districts are unable to support or give the necessary facilities with which a physician can work satisfactorily. There are other communities in which there is sufficient work with compensation to support a physician though this community may not be in a position to supply the facilities which are

necessary for the best type of medical work. It is natural that physicians should not seek these types of communities. They must have adequate compensation for a livelihood which problem could be met by subsidies, but in addition to this, most well-trained physicians of the present day feel the need of adequate laboratory, x-ray, and hospital facilities for the purposes of diagnosis and management of their cases. The movement for the establishment of rural hospitals should have a very definite effect in bringing about a proper distribution of physicians who are educated and trained to carry on this type of work. These physicians in these small communities must be general practitioners. It is therefore vital that the obstetric education should provide adequate training to this type of medical practitioners in the field of maternity and infancy.

Many physicians receive no more than undergraduate training. The majority of states and the majority of schools do not require an intern year. From our survey it is apparent that most undergraduates do not receive sufficient practical training in obstetrics. Those who secure the year's training as an intern are as a rule much better equipped, but even here there is not infrequently a lack of sufficient clinical experience in obstetrics.

In somewhat larger communities it is possible for men to undertake more or less specialization. A man might specialize in surgery and obstetrics or at least devote his major attention to these branches. He should have opportunity, by means of postgraduate courses of various types, to increase and improve his obstetric knowledge so that he would be in a position to furnish assistance to more general practitioners who have had less opportunity for perfecting themselves in these lines. This demand for postgraduate training could be met by courses in the various medical schools, by provision for such courses in various special maternity hospitals, by greater attention to obstetric clinics at medical society meetings and by extension and circuit courses which are perhaps somewhat better adapted to the needs of the general practitioner.

Provision must also be made for the adequate training of specialists in obstetrics and gynecology. This special training should cover a period of at least three years following the completion of a rotating internship and should consist of certain fundamental training in the basic sciences pertaining to maternity and early infancy, with abundant opportunity for clinical training in obstetrics, diseases of the newly born, and gynecology.—Fred L. Adair, *Am. J. Obst. & Gyn.*, June, 1931, p. 774.

Undergraduate Teaching of Obstetrics

Recommendations of the Committee: 1. Unification of the departments of obstetrics and gynecology in medical schools and in all hospitals affiliated with and controlled by the university. 2. All members of the teaching staff should be qualified obstetricians and gynecologists. 3. The extension of special pathology laboratory courses, manikin demonstrations and clinical clerkships. 4. More liberal use of charts, models, specimens, lantern slides, and movies. 5. Better correlation of the teaching of the basic sciences with the teaching of obstetrics and gynecology. 6. A rotating internship of one year, embracing a satisfactory maternity service, should be required for the licensure for the practice of medicine. It is recommended that an effort be made in all states to secure such legislation. 7. There should be larger opportunities for witnessing complicated cases. 8. The reasonable number of cases for students to participate in delivery under adequate supervision is not less than 25. 9. All student deliveries in the home should be supervised by a teaching obstetrician. Instruction to the students to call for help

"when needed" is not adequate supervision. 10. The bloc system for teaching clinical obstetrics. 11. The development of larger and better prenatal and postpartum clinics. 12. More liberal allotment of teaching hours in clinical obstetrics. Teaching hours and facilities should be on a parity with general surgery. 13. Adequate facilities for clinical instruction in obstetrics and detailed instruction in preconceptional, prenatal, intranatal, and postnatal care, preferably in an isolated maternity building, in close proximity to the university hospital and under university control. 14. The development of plans whereby more of the obstetric cases in hospitals not now used for teaching may be made available for that purpose. 15. The committee indorses the recommendation of the American Association of Medical Colleges that 5 per cent of the total hours required for graduation and degree be devoted to instruction in obstetrics. 16. There is need for the general adoption of a comparable form in the catalogues of medical schools which will obviate confusion and insure greater accuracy and completeness.—PALMER FINDLEY, *Am. J. Obst. & Gyn.*, June, 1931, p. 807.

Graduate Education of Physicians in Obstetrics

RECOMMENDATIONS OF COMMITTEE: 1. More teaching institutions should endeavor to provide adequate graduate courses in obstetrics. 2. While this Committee believes the fifth, or intern year of medicine to be an essential part of undergraduate education it must be remembered that the great majority of medical schools and state licensing boards do not so recognize it and until they do, adequate provision should be made to provide postgraduate and graduate courses in obstetrics for those graduates who have not had the educational opportunity offered by the intern year. 3. The European plan of the "Frauenklinik" which has been initiated in this country should be extended to all medical schools. Gynecology should be confined to a place subordinate to obstetrics. 4. Each university medical school should have its own maternity hospital sufficient to meet the undergraduate and the graduate requirements if such schools undertake to do graduate teaching. Schools with maternity hospitals located in metropolitan areas where they have a large amount of pathologic material are best suited for graduate education in obstetrics. 5. Certain fundamentals should be an integral part of each type of postgraduate and graduate teaching. The Committee recognized the importance of having in all medical schools strong departments for the clinical branches. The departments of the basic sciences assume especial importance in a medical school which undertakes to give graduate instruction for the purpose of training competent specialists, teachers, or investigators in the field of obstetrics. 6. The modern teacher should be well trained in operative technic as well as in all other clinical fields. It is desirable that he be a trained investigator. 7. Hospitals which are not closely associated with educational institutions are not suitable places for true graduate education but with the proper development of a teaching staff they would fulfill a very important place by giving postgraduate instruction designed to train men for special practice. 8. Graduate schools should have comparable methods of describing their courses which would give the prospective candidate a clear idea of the nature and length of the course and the credits given. 9. Schools giving graduate courses should adopt common minimum standards. This would not prevent any school from offering a more highly developed course. 10. In graduate education a candidate should fulfill certain fundamental requirements which would be a measure of his ability before being recognized as a specialist, a teacher, or an investigator, and before being given a degree. "Hours" have

no significance in graduate teaching. 11. State universities should develop courses of the circuit type for the purpose of improving and keeping local practitioners up to date. 12. Steps should be taken by the medical profession to the end that only properly qualified physicians may designate themselves as obstetric specialists capable of deciding upon and performing major obstetric procedures. There should be some ethical relationship between practitioners and specialists which would enable them to work together to serve the best interests of the patient. 13. No hospital should permit other than a well-qualified obstetric specialist to attend a serious obstetric complication or perform a major obstetric operation without consultation with a well-qualified specialist, preferably one attached to the hospital staff. 14. All interested organizations should endeavor to stimulate improvements in obstetric teaching and practice.—R. W. Holmes, *Am. J. Obst. & Gyn.*, June, 1931, p. 825.

Education of Midwives

Recommendations of Committee: After considering all the data which have been collected in this study and paying particular attention to the needs in certain sections of the country the committee has the following recommendations to make: 1. The ultimate solution of the problem of good obstetrics lies not in the midwife but in developing a sufficient number of doctors who are well trained in the fundamental principles of obstetrics. The development of such doctors is a direct responsibility of the medical schools. 2. At the present time the midwife is a necessity; she cannot be eliminated in some sections, and every effort should be made by the profession to improve her as rapidly as possible. This improvement should be brought about by local effort. Inasmuch as the midwifery need seems greatest in those states where the economic status is low, aid is needed and would hasten the relief of present conditions. 3. Recognized institutions for the training of midwives, which would assure preliminary education and proper training must be established if present conditions are to be permanently improved. The establishment of such institutions is a local and not a state responsibility. They should be located in sections needing the services of midwives and where they will not conflict with the obstetric teaching work of medical schools. It is felt that midwives trained in or near their own communities will be more likely to stay in those communities where their services are needed. 4. Inasmuch as the need for midwives seems greatest in those communities having a large colored population, it would seem wise to establish institutions for the proper training of colored midwives in the South where a wealth of controllable clinical material is available. 5. There should be provision for postgraduate courses for keeping midwives up-to-date. 6. The committee commends the good work that has been done in recent years by many State Boards of Health and feels that such work should be continued under the same supervision. 7. The committee appeals to the individual State Boards of Health to develop standards for midwife education, supervision, and control. Such standards would regulate the requirements for licensure and insure adequate supervision by obstetricians, qualified midwives, and public health nurses with midwifery training. These problems are local and can best be solved by local administration. 8. It is suggested that midwifery training would offer the colored trained nurse a larger field of activity.—J. R. McCord, *Am. J. Obst. & Gyn.*, June, 1931, p. 852.

Super-Medical Education

Every now and then we hear or read a protest concerning the supereducation that seems to be foremost in the minds of

those who control the destinies of our large educational institutions. We are interested especially in the discussion pertaining to the education of physicians and nurses, and we are quite prepared to fall in line with the growing sentiment that we are standing up so straight that we are falling backward in our efforts to create a uniformly useful physician and nurse for service among the average run of our population. In our medical schools there is too much of a tendency to emphasize the technical phases of the theory and practice of medicine, and not enough attention is given to the commoner or most needed factors pertaining to the treatment and alleviation or cure of disease. In our schools of nursing we are attempting to turn out nurses who know almost as much about medicine and surgery as does the recent graduate from a medical school, and in doing this we are neglecting some of the practical instruction and application of nursing knowledge so necessary for the proper care of from 80 to 90 per cent of our people who are ill. It is only a small percentage of our sick who need the services of a highly trained, technical nurse. Likewise it is true that a very large percentage of people who become ill first need the services of a good general practitioner, and while we regret to say it, we believe that our medical schools of today are not turning out men for the general practice of medicine who are equipped as well as they should be for practical work. They have been drilled in a large number of specialties, getting a smattering of this and a smattering of that, but not getting enough of the real fundamentals so necessary for the best type of service. This tendency toward specialism is reflected in the examinations given by medical and nursing boards, and our readers may remember that we have printed some of the idiotic questions pertaining to technical subjects, about which even many medical men know little or nothing, that have been given prospective nurses to answer when taking examination for licensure. The same is true of examinations by medical boards, and it is regretted that some medical boards seem bent not upon knowing how well a recent medical graduate is fitted for the general practice of medicine, but how well he is equipped to practice some specialty.

In commenting on this subject, Dr. Harvey Cushing, the well known surgeon of Harvard University, says (address before the Massachusetts State Medical Society) that "this supereducation that we are insisting upon now is depriving the people of an adequate number of well trained general physicians, for the exactions imposed upon those who would practice medicine are so severe as to discourage candidates, and the time is coming when there will be too few medical men to meet the demand." On the other hand, Dr. Cushing says, our supereducation is prompting the development of numerous pseudomedical cults the members of which, having had little education and training, are licensed to practice their peculiar belief but who in turn try to utilize the methods and practices employed by regular practitioners of medicine. This is a serious matter.

Another phase of this question is the increasing tendency on the part of our medical graduates to plunge into specialism without adequate training or education for special work, and many of them are encouraged in the decision to take up a specialty because they believe that they have gained considerable knowledge of the specialty while undergraduate students, and they feel that special practice offers pleasanter and more remunerative work. The end-result is a horde of embryo or amateur specialists who are preying upon the public and doing themselves and every one else injustice through their lack of education and training for the work they are attempting to do. So glaring has this fault become

that the American Medical Association has been asked to attempt to put into effect some plan whereby physicians who hold themselves out as specialists in any branch of medicine and surgery shall be certified by a special board as being qualified as specialists.

There is, however, as pointed out by Dr. Cushing, a crying need for more and better general practitioners of medicine, and a cessation on the part of our educational institutions of attempts to cram undergraduate students full of a lot of technical knowledge concerning the specialties, at the expense of a broader training that is required for general practice. Our boards of medical registration and examination would be doing a very wise thing if they tightened up in their severity as pertains to qualifications for the general practice of medicine, and pay less attention to the specialties which should be left to special boards.—*J. Indiana St. M. Assn.*, Aug. 15, 1931.

The London School of Hygiene and Tropical Medicine

The London School of Tropical Medicine, founded in 1899, has undergone great development in recent years, largely in consequence of the munificent gift of $10,000,000 from the trustees of the Rockefeller Foundation to enable the University of London to establish a center of postgraduate teaching and research in the science and art of preventive medicine. The idea that preventive medicine should embrace not this country alone but the whole world led to the incorporation of tropical medicine in the scheme. Hence the palatial buildings which were opened in 1929 by the Prince of Wales are called the London School of Hygiene and Tropical Medicine. The school is probably the most complete institution of the kind in the world. The staff is organized in six main divisions: public health, biochemistry, bacteriology, medical zoology, epidemiology and vital statistics, tropical medicine. The students form three main groups. A number varying between 70 and 100 come for a course of six months in tropical medicine and hygiene. Most of these are already in or desire to enter a public medical service in the British Empire or foreign countries. In a paper read before the Royal Society of Arts, Major Greenwood, F.R.S., professor of epidemiology and vital statistics, states that the course of instruction, partly clinical, partly laboratory training, makes considerable demands on their energy because much ground has to be covered in the time. The next largest group consists of students seeking to enter public health service and intending to sit for the diploma examination in public health of the University of London. This course is longer and takes a whole year, and it is possible to present the different aspects of a problem of disease more completely—the chemical, bacteriologic, parasitologic, epidemiologic and administrative sides one after another. Thus a sound knowledge of, say, the prevention of plague is obtained from various specialists. The third group consists of students specializing in one branch, such as bacteriology or epidemiology. It includes some of the best students, many of whom are foreigners. Young as the school is, the division of epidemiology has already had subjects of thirteen countries.—London Letter, *J. A. M. A.*, Aug. 15, 1931.

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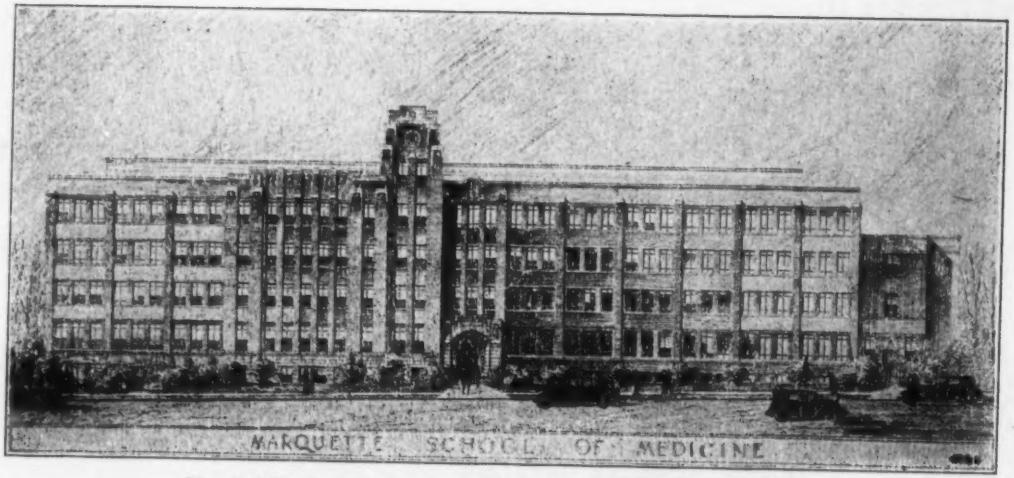

New building for Marquette University School of Medicine, Milwaukee.

Minnesota

University of Minnesota Medical School, Minneapolis.
University of Minnesota Graduate School, Medical Department, Minneapolis and Rochester.

Mississippi

University of Mississippi School of Medicine, University.

Missouri

St. Louis University School of Medicine, St. Louis.
University of Missouri School of Medicine, Columbia.
Washington University Medical School, St. Louis.

Nebraska

Creighton University School of Medicine, Omaha.
University of Nebraska College of Medicine, Omaha.

New Hampshire

Dartmouth Medical School, Hanover.

New York

Albany Medical College, Albany.
Columbia University College of Physicians and Surgeons, New York.
Columbia University, New York Post Graduate Medical School, New York.
Cornell University Medical College, Ithaca and New York.
Long Island College Hospital, Brooklyn.
New York Homeopathic Medical College, New York.
Syracuse University College of Medicine, Syracuse.
University and Bellevue Hospital Medical College, New York.
University of Buffalo Medical Department, Buffalo.
University of Rochester School of Medicine, Rochester.

North Carolina

Duke University School of Medicine, Durham, N. C.
University of North Carolina School of Medicine, Chapel Hills.
Wake Forest College School of Medicine, Wake Forest.

North Dakota

University of North Dakota School of Medicine, University.

Ohio

Ohio State University College of Medicine, Columbus.
University of Cincinnati College of Medicine, Cincinnati.
Western Reserve University School of Medicine, Cleveland.

Oklahoma

University of Oklahoma School of Medicine, Norman and Oklahoma City.

Oregon

University of Oregon Medical School, Portland.

Pennsylvania

Hahnemann Medical College and Hospital, Philadelphia.
Jefferson Medical College of Philadelphia.
Temple University School of Medicine, Philadelphia.
University of Pennsylvania Graduate School of Medicine, Philadelphia.
University of Pennsylvania School of Medicine, Philadelphia.
University of Pittsburgh School of Medicine, Pittsburgh.
Woman's Medical College of Pennsylvania, Philadelphia.

Philippine Islands

University of the Philippines College of Medicine, Manila.

South Carolina

Medical College of the State of South Carolina, Charleston.

South Dakota

University of South Dakota College of Medicine, Vermillion.

Tennessee

Meharry Medical College, Nashville.
University of Tennessee College of Medicine, Memphis.
Vanderbilt University School of Medicine, Nashville.

Texas

Baylor University College of Medicine, Dallas.
University of Texas Department of Medicine, Galveston.

Utah

University of Utah School of Medicine, Salt Lake City.

Vermont

University of Vermont College of Medicine, Burlington.

Virginia

Medical College of Virginia, Richmond.
University of Virginia Department of Medicine, Charlottesville.

West Virginia

West Virginia University School of Medicine, Morgantown.

Wisconsin

Marquette University School of Medicine, Milwaukee.
University of Wisconsin Medical School, Madison.

Forty-second Annual Meeting

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